

ABSTRACT

Title of dissertation: A Theory of Generalized Pied-Piping
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The purpose of this thesis is to construct a theory to derive how pied-piping of formal features of a moved element takes place, by which some syntactic phenomena related to ϕ -features can be accounted for. Ura (2001) proposes that pied-piping of formal-features of a moved element is constrained by an economy condition like *relativized minimality*. On the basis of Ura's (2001) proposal, I propose that how far an element that undergoes movement can carry its formal features, especially focusing on ϕ -features in this thesis, is determined by two conditions, a locality condition on the generalized pied-piping and an anti-locality condition on movement. Given the proposed analysis, some patterns of so-called wh-agreement found in Bantu languages can be explained and with the assumption that ϕ -features play an role for binding, presence or absence of WCO effects in various languages can be derived without recourse to A/ \bar{A} -distinctions.

A THEORY OF GENERALIZED PIED-PIPING

by

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List of Abbreviations

ABS = absolutive
ACC = accusative
AFF = affirmative
APPL = applicative morpheme
ASP = aspect or mood maker
AUG = augment
AUX = auxiliary
CA = complementizer agreement
CAUS = causative
CL = classifier
COMP = complementizer
COP = copular
DAT = dative
DECL = declarative
FV = final vowel
FOC = focus maker
FUT = future tense
GEN = genitive
HAB = habitual
HON = honorification form
IMPF = imperfective
NEG = negation
NOM = nominative
NPAST = non past
OM = object maker
PERF = perfective
PL = plural
POSS = possessive
PRED = predication head
PRES = present tense
PRG = progressive
PRT = particle
Q = Q-particle
REFL = reflexive
SA = subject agreement
SBJ = subjunctive mood
SG = singular
TOP = topic maker

Chapter 1: Introduction

1.1 Overview

In this thesis I propose a theory to derive how pied-piping of formal features of a moved element takes place, by which some syntactic phenomena related to ϕ -features can be accounted for. Chomsky (1995:Chapter 4) proposes that when an element undergoes movement that is triggered by checking of α -feature, pied-piping of formal features other than the α -feature can take place *automatically*, which Ura (2001) interprets as meaning that pied-piping of formal features is cost-free and free from a syntactic constraint. Contrary to such a claim, Ura (2001) proposes that pied-piping of formal-features is not cost-free and it is subject to an economy condition like *relativized minimality*. On the basis of Ura's (2001) proposal, I propose that how far an element that undergoes a movement can carry its formal features, especially focusing on ϕ -features in this thesis, is determined by two conditions, a locality condition on generalized pied-piping and an anti-locality condition on movement. Given the proposed analysis, some patterns of so-called wh-agreement found in Bantu languages can be explained and with the assumption that ϕ -features play an role for binding, WCO effects in various languages can be derived without recourse to A/ \bar{A} -distinctions.

1.2 Theory of Pied-piping of Formal Features

Under the framework of the Government and Binding (GB) theory (Chomsky 1981, 1982, 1986a,b), movement is the operation that puts an element in a structurally higher position and leave a trace in its original position, as illustrated in (1).

$$(1) \quad [XP_i \ [\dots t_i]]$$

Since the early 1990s, a new framework has been developed along the lines of the guideline called “Minimalist Program”. Under the framework, it is proposed that a trace of a moved phrase is a copy of the element (Chomsky 1993, 1995), which is called “the Copy theory of Movement”.

$$(2) \quad [XP_i \ [\dots XP_i]]$$

Moreover, under the framework of Chomsky (1995:Chapter 4), it is proposed that movement of a syntactic object α is triggered by “Attraction” of a formal feature F of α , which pied-pipes other materials of α (i.e., phonological features, semantic features, the other formal features, and the category) that are required for convergence. To show this, suppose that the Head X^0 has a feature α that must be checked, and YP has the matching feature α , as illustrated in (3-a). In such a case, X^0 Attracts the (closest) α -feature of YP to its checking domain, [Spec, XP] or an adjoined position to X^0 . Suppose that the α -feature of YP moves to [Spec, XP]. In this case, the movement of the α -feature is accompanied by pied-piping of the other

features of YP and its category if an overt movement is required for convergence, as illustrated in (3-b) and (3-c).^{1,2} This is called “generalized pied-piping”. Then, checking between X^0 and YP takes place to check α -feature of X^0 , as in (3-d).

- (3) a. $[_{XP} \quad X^0_{-\alpha} [_{ZP} WP_{-\gamma} [\dots YP_{-[\alpha, \beta, \gamma]}]]]$
- b.
$$[_{XP} \quad \overset{\text{Attract } \alpha}{\overbrace{X^0_{-\alpha} [_{ZP} WP_{-\gamma} [\dots YP_{-[\alpha, \beta, \gamma]}]] }^{\downarrow}}]]$$
- c.
$$[_{XP} \quad \boxed{YP_{-[\alpha, \beta, \gamma]}} \quad X^0_{-\alpha} [_{ZP} WP_{-\gamma} [\dots \boxed{YP_{-[\alpha, \beta, \gamma]} }]]]$$
- d.
$$[_{XP} \quad YP_{-[\alpha, \beta, \gamma]} \quad \overbrace{X^0_{-\alpha} [_{ZP} WP_{-\gamma} [\dots YP_{-[\alpha, \beta, \gamma]}]] }^{\downarrow}]]$$

As for pied-piping of a category, Chomsky (1995) argues that the movement with pied-piping of a category is less economical than the one without it, so the former takes place only if it is required for convergence. Thus, a certain case of generalized pied-piping might be subject to factors that constrain movement (Chomsky 1995:264). Note, however, that as regarding pied-piping of *formal features* other than the one involved in feature checking, Chomsky (1995) claims that it takes

¹Another possibility is that X^0 Attracts α feature of YP to its adjoined position, which is accompanied by pied-piping of the other formal features of YP to the position and by pied-piping of its category (i.e., YP) to [Spec, XP].

²In the case of covert movement, only formal features undergo movement, which targets an adjoined position to a Head. (Chomsky 1995:270-271)

place automatically. That is, movement of a formal feature F for feature checking *automatically carries along* the set of formal features FF (Chomsky 1995:265). This is interpreted as in (4) in Ura (2001).

(4) *Generalized Pied-Piping of formal features*

“As long as a formal feature Φ of a category Ψ is legitimately attracted in accordance with the definition of Attract, other formal features of Ψ can also be pied-piped together with Φ , as free-riders, to the target.” (Ura 2001:170)

This means that pied-piping of formal features is cost-free and can take place without any restriction.

Contrary to (Ura’s (2001) interpretation of) Chomsky’s (1995) claim as in (4), Ura proposes that generalized pied-piping of formal features is not cost-free but it is constrained by an economy condition such as *relativised minimality* (Rizzi 1990).³ As discussed in 2.3.1 in detail, Ura (2001) proposes the condition (5) and argues that with the condition it is possible to derive so-called improper movement.⁴

³It is not clear whether Ura’s (2001) proposal as in (5) is, as he says, an alternative to Chomsky’s (1995) or, rather, an elaboration. However, this is not really important. What is important is that as we will see in this thesis, Ura’s (2001) proposal turns out to have desirable consequences.

⁴In Ura’s (2001) study, “structurally intervene” is defined as in (i), though he suggests to revise the definition (i-a) to (i-b) in the Appendix.

- (i) a. α structurally intervenes between β and γ iff (i) α c-commands β , and (ii) γ c-commands α .
- b. α structurally intervenes between β and γ iff (i) α c-commands or dominates β , and (ii) γ c-commands α .

(5) *Locality Condition on Generalized Pied-Piping (LCGPP)* (Ura 2001:176)

A formal feature F1 is prohibited from being pied-piped as a free-rider if another formal feature F2, which matches with F1, structurally intervenes between F1 and the target.

Given the condition, a movement of a formal feature other than the one involved in checking cannot take place if there is an intervening matching feature.

Let us look at how the two proposals make a derivation differently. Under generalized pied-piping of formal features as in (4), when YP undergoes a movement that is triggered by feature checking of a formal feature α , the other formal features of YP, that is γ and β in (6-a), can be freely pied-piped to the landing site regardless of whether there is an intervening matching feature or not. Under Ura's (2001) analysis, on the other hand, in the same situation, γ -feature of YP cannot be pied-piped to the landing site because the γ -feature of WP is intervening between YP's pre-moved position and the landing site, as illustrated in (6-b).

(6) a. *Under generalized pied-piping of formal features (4)*

[illegible]

In this thesis, I adopt the definition of “structurally intervene” that is defined in Chomsky (1995).

b. *Under Ura's (2001) proposal*

$$\begin{array}{c}
 [\text{XP YP-}[\alpha, \beta, \gamma] \text{X}^0\text{-}\alpha [\text{ZP WP-}\underline{\gamma} [\dots \text{YP-}[\alpha, \beta, \gamma]]]] \\
 \uparrow \hspace{10em} \underbrace{\hspace{10em}} \\
 \text{*pied-piping of } \gamma
 \end{array}$$

Therefore, YP has a set of the three formal features, α , β and γ at the landing site under the former proposal, whereas it has only the two features, α and β , under the latter proposal. Thus, the two proposals have different consequences on a set of formal features of a moved element at the landing site.

In this thesis, I investigate some phenomena involving so-called $\bar{\text{A}}$ -movement because the two proposals have different predictions about whether an $\bar{\text{A}}$ -moved element can carry its ϕ -features to the landing site if it moves across an intervening subject with ϕ -features. That is, as illustrated in (7), in the situation where a subject is in [Spec, IP] and another element XP undergoes $\bar{\text{A}}$ -movement to [Spec, CP], the subject is intervening between XP's pre-movement position and its landing site, [Spec, CP]. In such a situation, because the movement is triggered by checking of a wh-feature (or whatever feature relevant to wh-movement), ϕ -features of XP undergo pied-piping.

$$\begin{array}{c}
 (7) \quad [\text{CP XP-}[\text{wh}, \phi] \text{C}^0\text{-wh} [\text{IP Subj-}\underline{\phi} [\dots \text{XP-}[\text{wh}, \phi]]]] \\
 \uparrow \hspace{10em} \underbrace{\hspace{10em}} \\
 \text{pied-piping of } \phi ?
 \end{array}$$

Since ϕ -features of the subject are interveners, XP cannot carry its ϕ -features to the landing site in such a situation under Ura's (2001) proposal. On the other hand under the theory of generalized pied-piping of formal features as in (4), since pied-

piping of formal features is free from any syntactic constraint, XP can carry the features to the landing site.

In the next chapter, on the basis of Ura's (2001) proposal that generalized pied-piping of formal features is subject to a locality condition, I propose an analysis on how far an element can carry its formal features when it undergoes a movement. In the following chapters, I show that the proposed analysis makes it possible to account for so-called wh-agreement phenomena found in Bantu languages and WCO effects in various environments in various languages, which lends empirical supports for the idea that generalized pied-piping of formal features (or Copy of formal features under the current framework) is not cost-free but subject to a syntactic constraint.

1.3 Outline

The outline of the dissertation is as follows.

In Chapter 2, I propose a theory of generalized pied-piping of formal features assuming that it is subject to a locality condition. I propose that when an element undergoes movement, how far it can carry its formal features is determined by the two conditions, the locality condition on generalized pied-piping and the anti-locality condition on movement.⁵

(8) *Locality Condition on Generalized Pied-Piping*

A formal feature cannot be pied-piped as a free rider if there is an intervening

⁵The definition of *intervener* and *the minimal domain* in the two conditions are the ones given in the framework of Chomsky (1995).

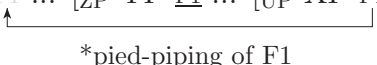
matching feature.

(9) *Anti-locality Condition on Movement*

Movement within a minimal domain is disallowed.

As discussed in Chapter 2 in detail, given the locality condition on generalized pied-piping, a moved element cannot carry its formal feature F1 to a landing site if there is an intervener with a matching feature F1.

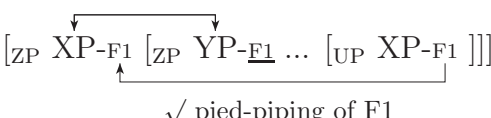
$$(10) \quad [_{WP} XP-\underline{F1} \dots [_{ZP} YP-\underline{F1} \dots [_{UP} XP-F1]]]$$



 *pied-piping of F1

Given the notion of *equidistance* proposed in Chomsky (1995), however, such a blocking of pied-piping can be avoided by adjunction operation, by which a landing site of the moved element and the position of the intervener can be equidistant from the pre-movement position of the element.

$$(11) \quad [_{ZP} XP-F1 [_{ZP} YP-\underline{F1} \dots [_{UP} XP-F1]]]$$



 ✓ pied-piping of F1

Therefore, adjunction makes it possible that a moved element carries its formal feature to a landing site even if another element with a matching feature is in a structurally higher position. Given the anti-locality condition on movement with the definition of the *minimal domain* given in Chomsky (1995), however, it is not

the case that adjunction can take place freely. That is, once an element adjoins to a maximal projection, it cannot move into a domain of the next higher maximal projection because its pre-movement position and its landing site are within the same minimal domain.

$$(12) \quad \boxed{[_{ZP} \text{ XP } \dots Z^0 [_{UP} \text{ XP }]]} [_{UP} \dots]]$$

*movement

Thus, in some cases, an element can undergo adjunction to pied-pipe its formal feature crossing an element with a matching feature, but in other cases, it cannot. This is how the possibility of pied-piping of formal features by a moved element is determined. In Chapter 2, I also discuss backgrounds of the two conditions, (8) and (9), and other theoretical assumptions I adopt in this thesis.

In Chapter 3, I examine so-called wh-agreement phenomena observed in some Bantu languages. Wh-agreement is a phenomenon in which a fronted wh-phrase (or Focus phrase) shows agreement with the following complementizer (or agreement Head assumed to base-generate under C^0). As exemplified by the examples from Kinande in (13), in Bantu languages, the form of wh-agreement varies depending on noun class of the fronted noun, which is supposed to be classified according to a set of ϕ -features.

- (13) *Kinande*
- a. IyondI **yO** Kambale alangIra?
 who(SG).1 CA.1 Kambale saw
 ‘Who did Kambale see?’

- b. ABahI **Bo** Kambale alangIra?
 who(PL).2 CA.2 Kambale saw
 ‘Who did Kambale see?’ (Rizzi 1990:55)

Assuming that wh-agreement in Bantu occurs under the Spec-Head configuration in CP, the presence of wh-agreement in the sentences (13) indicates that a fronted wh-phrase pied-pipes its ϕ -features to the landing site, which is supposed to be [Spec, CP]. Now, given the theory of generalized pied-piping proposed in Chapter 2, (14) follows.

- (14) An object (or non-subject) can pied-pipe its ϕ -features to the domain of CP only if a subject (with ϕ -features) is not in an intervening position.

In Chapter 3, I examine a pattern of wh-agreement mainly in Lubukusu, Kilega and Kinande to show that (14) is borne out in these languages.

In Chapter 4, I discuss binding phenomena in English. The purpose of this chapter is to derive binding phenomena, especially WCO effects as exemplified in (15-b), without resorting to A/ \bar{A} -distinction.

- (15) a. Who₁ loves his₁ mother? (✓ bound variable reading)
 b. *?Who₁ does his₁ mother love? (*? bound variable reading)

To achieve this, I propose (16).

- (16) Only a copy with ϕ -features is available for binding.

Given the theory of generalized pied-piping proposed in Chapter 2, some copies of a moved element retain their ϕ -features in a position, but others do not in a certain situation. With the proposal (16), such a copy without ϕ -features cannot be a binder, which makes a sentence ungrammatical with a bound variable reading. In this chapter, in addition to WCO effects in a simple SVO sentence, I discuss presence/absence of WCO effects in long-distance extraction, covert movement, raising constructions, locative inversion, so-called Weakest Crossover (Lasnik and Stowell 1991), and wh-questions with D-linked wh-phrase. Moreover, I discuss how Condition A and Condition C are recaptured under the proposed analysis.

In Chapter 5, I discuss cross-linguistic differences in WCO effects in object fronting. As shown by the unacceptability of the sentence (15-b), English shows WCO effects when a quantificational object moves across a subject containing a bound pronoun. In some languages like German and Japanese, by contrast, a sentence corresponding to the English one (15-b) allows a bound variable reading.⁶

- (17) a. Wen_{1i} liebt [seine₁ Mutter] t_i?
 who-ACC loves his mother.NOM
 ‘Who₁ does his₁ mother love?’ (German)
- b. Dare_{1-o_i} [soitu₁-no hahaoya]-ga t_i aisiteiru no?
 who-ACC the.person-GEN mother-NOM love Q
 ‘Who₁ does his₁ mother love?’ (Japanese)

In this chapter, I address the questions (i) why the sentences in (17) do not show WCO effects, and (ii) what parametric difference is relevant to distinguishing the

⁶In this thesis, movement chains and binding chains are represented differently; movement chains are represented by alphabet indexes, and binding chains are represented by number indexes.

English-type languages that show WCO effects in object fronting and the German/Japanese-type languages that do not show the effects.

In Chapter 6, I investigate how an element that undergoes scrambling affects binding phenomena in Japanese. Contrary to the widely-assumed generalization that clause-internal scrambling can produce a new binding relation while long-distance scrambling cannot, I observe that even long-distance scrambling can produce a new binding relation in some environments. On the basis of the observation, I make the generalization in (18).

(18) *Generalization on long-distance scrambling in Japanese*

Long-distance scrambling can produce a new binding relation only if i) the embedded subject is null and ii) a bindee is contained in the matrix dative argument (or in the matrix subject if there is no dative argument).

In this chapter, I show that the new generalization (18) can be derived by the analysis proposed in this thesis.

Chapter 7 is devoted to the Conclusion.

Chapter 2: Theory of Generalized Pied-Piping of Formal Features

2.1 Overview

The purpose of this chapter is to propose a theory of generalized pied-piping of formal features, assuming that it is subject to a locality condition as proposed in Ura (2001). My proposal is that how an element that undergoes a movement can carry its formal features is determined by the locality condition on generalized pied-piping and the anti-locality condition. In section 2.2, we will look at the detail of the proposal. In section 2.3, I will discuss the background of the two conditions adopted in my proposal. Section 2.4 concerns how generalized pied-piping of formal features and the locality condition on it can be captured under the framework after Chomsky (2000, 2001) that assumes that movement (i.e., Move) consists of the two operations, Merge and Copy.

2.2 Proposal

In this section, I propose an analysis to determine how far a moved element can carry its formal features. Based on Ura's (2001) proposal that generalized-pied-piping of formal features is subject to a locality condition, I propose that how far an element

can pied-pipe its formal features when it undergoes movement is determined by the two conditions, the locality condition on generalized pied-piping (Ura 2001) and the anti-locality condition on movement (Koizumi 1993, 2000, Abels 2003a,b, Bošković 2005; cf. Fukui 1993, Saito and Murasugi 1999, Grohmann 2000).

(1) *Locality Condition on Generalized Pied-Piping*

A formal feature cannot be pied-piped as a free rider if there is an intervening matching feature.

(2) *Anti-locality Condition on Movement*

Movement within a minimal domain is disallowed.

As for the definitions of *minimal domain* and *intervene* in the conditions (1) and (2), I adopt the ones given/used in Chomsky (1995).¹

¹In this thesis, I assume that checking/agreement can take place just under a c-command relation as proposed in the *Probe-Goal* Agree system in Chomsky (2000, 2001, a.o.). I assume that *interveners* are determined from the viewpoint of an element that undergoes movement (i.e. Goal under the Probe-Goal system) in the case of pied-piping as defined in (5), while they are determined from the viewpoint of an element that causes checking/agreement (i.e. Probe under the Probe-Goal system) in the case of checking/agreement or feature movement for checking/agreement. Thus, the definition of *intervene* in the latter case is as follow.

- (i) γ *intervenes* between α and β in *checking/agreement* or *feature movement for checking/agreement* iff α c-commands γ and γ c-commands β , and γ and β are not equidistant from α .

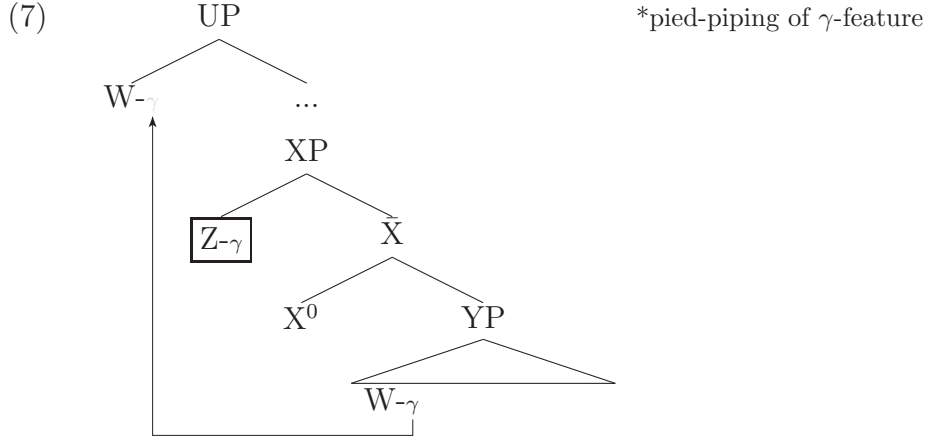
- (3) *Minimal Domain* (Chomsky 1995:198)²
- a. *Max* (α) = the least full-category [irreflexively] dominating α .
 - b. *Domain* of a head α = the set of nodes [irreflexively] contained in *Max* (α) that are distinct from α and do not contain α .
 - c. For any set *S* of categories, *Minimal* (*S*) = the smallest subset *K* of *S* such that for any $\gamma \in S$, some $\beta \in K$ reflexively dominates γ .
- (4) *Domination* (Chomsky 1995:177)³
- a. α *dominates* β if every segment of α dominates β .
 - b. α *contains* β if some segment of α dominates β .
- (5) γ *intervenes* between α and β in pied-piping iff α c-commands γ and γ c-commands β , and γ and α are not equidistant from β .
- (6) α and β are *equidistant* from γ if they are in the same minimal domain.
- (Chomsky 1995:184)

Let us look at how the two conditions, (1) and (2), determine how far a moved element can pied-pipe its formal features. Take a look at the structure (7).

Such a hybrid analysis is proposed in Ochi (1999) under the framework of Chomsky (1995:Chapter 4), in which *Attract* (movement of formal features) and *Move* (movement of categories) are constrained by different locality conditions.

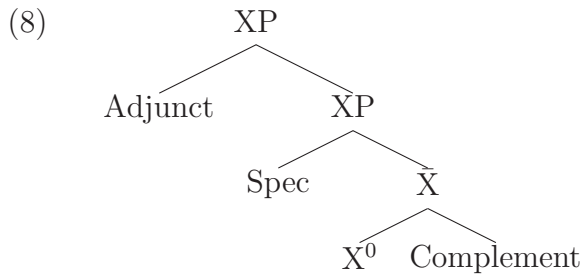
²Differently from Chomsky (1993, 1995), I assume that a minimal domain is not expanded after a Head-movement.

³In the definition of *domination*, the traditional distinction between segment and category is assumed. It is an issue how the distinction can be made under a label-free model.



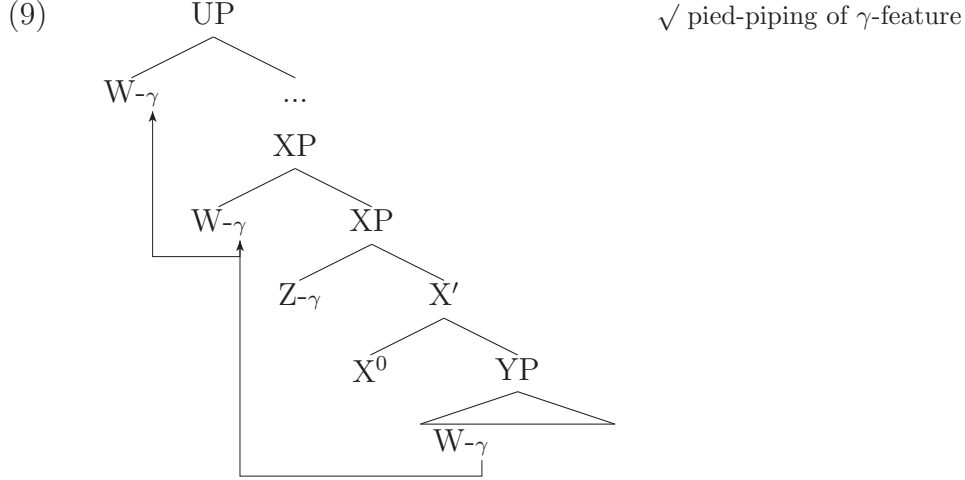
Given the locality condition on generalized pied-piping (1), when W undergoes movement out of YP to the domain of UP in the structure (7), it cannot pied-pipe its γ -feature to the landing site because there is an intervening γ -feature of Z in [Spec, XP], which blocks W's pied-piping its γ -feature.

Note that given the definition of *minimal domain* in (3), the minimal domain of X⁰ in the structure (8) is the set of the nodes, [Adjunct, XP], [Spec, XP] and [Complement, XP] (i.e., $\text{Minimal}(\text{Max}(X)) = [\text{Adjunct}, \text{XP}], [\text{Spec}, \text{XP}], [\text{Complement}, \text{XP}]$).



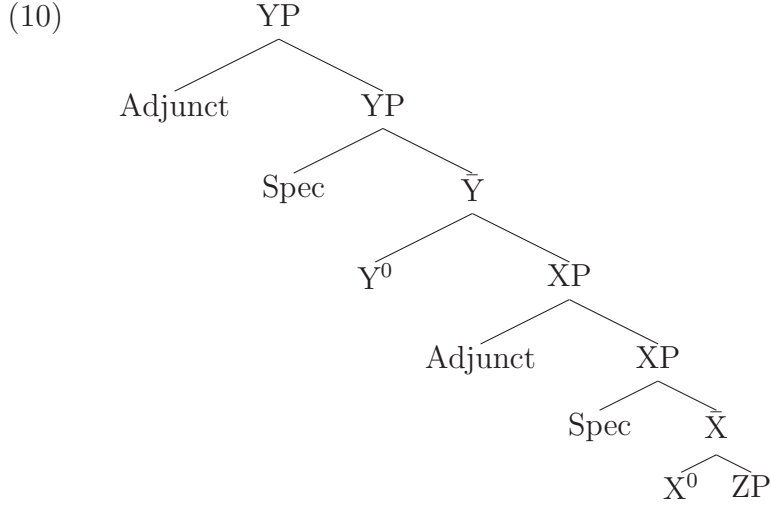
Therefore, an XP-adjoined position and a XP-Spec position are in the same minimal domain. Then, provided the definition of *equidistant* in (6), the two positions are equidistant from another position. Thus, in the case like (7), if W adjoins to XP on

the way to the final landing site, it can pied-pipe its γ -feature to the final landing site, as illustrated in (9).

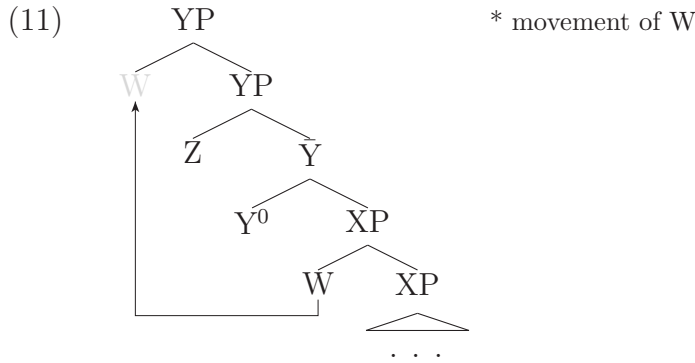


In this way, adjunction enables an element to pied-pipe its formal features to a landing site even if there is an intervening matching feature on the way to the position. If adjunct can take place freely, an element can pied-pipe its formal features to the final landing site in any case. That is, unrestricted adjunction operation would make no relativized minimality effects at all.

Note, however, that given the anti-locality condition on movement (2), it is not the case that adjunction can take place freely. The anti-locality condition states that movement within the same minimal domain is prohibited. Given the definition of the minimal domain (3), the minimal domain of X^0 in the structure (10) is the set of the nodes, ZP, [Spec, XP] and [Adjunct, XP] (i.e., $\text{Minimal}(\text{Max}(X)) = \text{ZP}, [\text{Spec}, \text{XP}], [\text{Adjunct}, \text{XP}]$) and the minimal domain of Y^0 is the set of the nodes, XP, [Spec, YP], [Adjunct, XP] and [Adjunct, YP] (i.e., $\text{Minimal}(\text{Max}(X)) = \text{XP}, [\text{Spec}, \text{YP}], [\text{Adjunct}, \text{XP}], [\text{Adjunct}, \text{YP}]$).

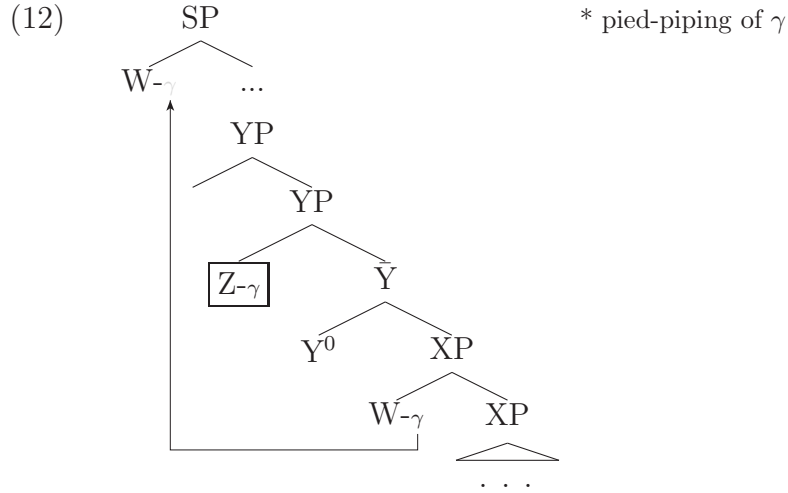


Therefore, an XP-adjoined position and an adjoined position to the next higher maximal position YP are in the same minimal domain of Y^0 . Then, given the anti-locality condition on movement (2), movement from the XP-adjoined position to the YP-adjoined position is prohibited, as illustrated in (11). That is, once an element that undergoes movement adjoins to a maximal projection, it cannot adjoin to (or move into a domain of) the next higher maximal projection.



Thus, an element cannot undergo adjunction to some position in order to avoid a violation of the locality condition on generalized pied-piping in some case. Then, if W in the structure (12) must move to a higher position, W has to move to the destination without stopping at a YP-adjoined position. Then, W cannot carry its

γ -feature to the position because of the intervening γ -feature of Z in [Spec, YP].



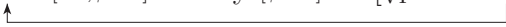
Therefore, there is a case where an XP cannot carry its formal features to a certain position even though adjunction potentially makes it possible that the XP avoids a violation of the locality condition on generalized pied-piping.

This is the proposed analysis, in which how far a moved element can carry its formal features is determined by the two conditions (1) and (2).

Let us, now, look at a more specific example, where an object undergoes wh-movement to the domain of CP. Consider the derivation of the sentence (13).

(13) What did Mary buy?

To derive the sentence, first, vP is constructed as illustrated in (14-a), in which the subject base-generates in [Spec, vP] and the object base-generates in [Complement, VP]. After that the object wh-phrase moves to the domain of vP , as illustrated in (14-b).

- (14) a. [_{vP} Mary- $[\phi \dots]$] v^0 [_{VP} V⁰ what- $[\text{wh}, \phi \dots]$]]
- b. [_{vP} what- $[\text{wh}, \phi \dots]$] Mary- $[\phi \dots]$] v^0 [_{VP} V⁰ what- $[\text{wh}, \phi \dots]$]]
- 

I assume that this movement of the object takes place in order to avoid a violation of the *Phase-Impenetrability Condition (PIC)* proposed in Chomsky (2000).

- (15) *The Phase-Impenetrability Condition (PIC)* (Chomsky 2000)

In phase α with head H, the domain of H is not accessible to operations outside α , only H and its edge are accessible to such operations.

That is, given the PIC with the assumption that vP and CP are phases (Chomsky 2000, 2001), the object wh -phrase must move to a vP -edge position because otherwise, it cannot be accessed from the outside of the vP . Such a movement may be triggered by checking of a certain feature (*P-feature* in Chomsky (2000) or *edge-feature* in Chomsky (2008)) or may occur without any trigger, and it may target $[\text{Spec}, vP]$ or $[\text{Adjunct}, vP]$.⁴ In either case, provided the definition of *minimal domain* and *equidistance* given in (3) and (6), the subject in (the inner) $[\text{Spec}, vP]$ and the landing site of the object (i.e., the outer $[\text{Spec}, vP]$ or $[\text{Adjunct}, vP]$) are within the same minimal domain and equidistant from $[\text{Complement}, VP]$, so the object can pied-pipe its ϕ -features to the vP -edge position.

⁴In the case where the landing site of the object is $[\text{Spec}, vP]$, the structure has a multiple-specifier configuration in which another specifier of the vP is occupied by the subject.

equidistant from I^0 . Thus, the subject can retain its ϕ -features in [Spec, IP] to undergo feature checking with I^0 , as illustrated in (18).⁶

- (18) a.
$$\begin{array}{c} \text{equidistant from } I^0 \\ \swarrow \quad \searrow \\ [\text{IP} \quad I^0-\phi \text{ } [_{vP} \text{ what-}[\text{wh}, \phi \dots] \text{ Mary-}[\phi \dots] \text{ } v^0 \text{ } [_{VP} \text{ V}^0 \text{ what-}[\text{wh}, \phi \dots]]]] \end{array}$$
- b.
$$\begin{array}{c} [\text{IP} \text{ Mary-}[\phi, \text{Case } \dots] \text{ } I^0-\phi \text{ } [_{vP} \text{ what-}[\text{wh}, \phi, \text{Case } \dots] \text{ Mary-}[\phi, \text{Case } \dots] \text{ } v^0 \text{ } [_{VP} \text{ V}^0 \\ \text{what-}[\text{wh}, \phi \dots]]]] \quad \checkmark \text{ movement of } \phi \text{ and Case for feature checking} \end{array}$$
- c.
$$\begin{array}{c} \text{checking} \\ \swarrow \quad \searrow \\ [\text{IP} \text{ Mary-}[\phi, \text{Case } \dots] \text{ } I^0-\phi, \text{EPP} \text{ } [_{vP} \text{ what-}[\text{wh}, \phi \dots] \text{ Mary-}[\phi \dots] \text{ } v^0 \text{ } [_{VP} \text{ V}^0 \text{ what-}[\text{wh}, \phi \\ \dots]]]] \end{array}$$

After the subject moves to [Spec, IP], the object wh-phrase undergoes wh-movement to [Spec, CP] to check wh-feature (or a certain feature that is relevant to wh-movement) of C^0 . In this movement, formal features of the object other than the wh-feature can be pied-piped to the landing site if there is no intervening matching feature. However, ϕ -features of the object cannot be pied-piped because ϕ -features of the subject in [Spec, IP] are intervening.

⁶As well as the case where the subject moves to [Spec, IP], the wh-object in the outer [Spec, vP] is not an intervener for checking/agreement relation between I^0 and the subject in the inner [Spec, vP] in the case where the subject stays in [Spec, vP].

- (i)
$$\begin{array}{c} \checkmark \text{ checking/agreement} \\ \swarrow \quad \searrow \\ [\text{IP} \quad I^0-\phi \text{ } [_{vP} \text{ what-}[\text{wh}, \phi \dots] \text{ Mary-}[\phi \dots] \text{ } v^0 \text{ } [_{VP} \text{ V}^0 \text{ what-}[\text{wh}, \phi \dots]]]] \\ \uparrow \quad \downarrow \\ \text{equidistant} \end{array}$$

$$(19) \quad \begin{array}{c} [\text{CP what-}[\text{wh}, \phi \dots] \text{ C}^0 \text{ } \overbrace{[\text{IP Mary-}[\phi \dots] \text{ I}^0 \text{ } \overbrace{[\text{vP what-}[\text{wh}, \phi \dots] [\text{vP Mary-}[\phi} \\ \dots] \text{ v}^0 [\text{VP V}^0 \text{ what-}[\text{wh}, \phi \dots]]]]]}^{\text{*pied-piping of } \phi} \end{array}$$

Therefore if the object moves from the vP -edge position directly to [Spec, CP], a copy of the object in [Spec, CP] cannot retain its ϕ -features.

Note that if the object in the vP -edge position moves to an IP-adjoined position, the object can carry its ϕ -features to the landing site because an adjoined position and a Spec position of the same Head are equidistant from the object's pre-movement position, so the subject in [Spec, IP] is not an intervener.

$$(20) \quad \begin{array}{c} \text{equidistant} \\ \downarrow \quad \quad \quad \downarrow \\ [\text{IP what-}[\text{wh}, \phi \dots] \text{ } \overbrace{[\text{IP Mary-}[\phi \dots] \text{ I}^0 \text{ } \overbrace{[\text{vP what-}[\text{wh}, \phi \dots] \text{ Mary-}[\phi \dots] \text{ v}^0} \\ \uparrow \quad \quad \quad \uparrow \\ [\text{VP V}^0 \text{ what-}[\text{wh}, \phi \dots]]]]]}^{\text{✓ pied-piping of } \phi} \end{array}$$

If the edge position is [Adjunct, vP], such a movement is disallowed by the anti-locality condition on movement (2) since the vP -adjoined position and the next higher IP-adjoined position are within the same minimal domain, so movement from the former to the latter is disallowed.

$$(21) \quad \begin{array}{c} \text{minimal domain} \\ \boxed{[\text{IP what-}[\text{wh}, \phi \dots] \text{ } \overbrace{[\text{IP Mary-}[\phi \dots] \text{ I}^0 \text{ } \overbrace{[\text{vP what-}[\text{wh}, \phi \dots] [\text{vP Mary-}[\phi \dots]} \\ \uparrow \quad \quad \quad \uparrow \\ \text{v}^0 [\text{VP} \dots]]]]]}^{\text{*movement}} \end{array}$$

If, on the other hand, the vP -edge position is the outer [Spec, vP], the object wh-phrase can move from the edge-position to an IP-adjoined position because the two positions are not within the same minimal domain. However, once the object adjoins to IP, it cannot move to [Spec, CP] because the IP-adjoined position and a Spec position of the next higher CP are within the same minimal domain of C^0 , so the anti-locality condition prohibits a movement from the former position to the latter position.

(22) *minimal domain*

$$\boxed{[\text{CP } \text{what-}[\text{wh}, \phi] \text{ C}^0 [\text{IP } \text{what-}[\text{wh}, \phi \dots]] \text{ [IP } \text{Mary-}[\phi \dots] \text{ I}^0 \text{ } \cancel{\text{vP}} \text{ } [\text{vP } \dots]]]]}$$

*movement

Therefore, regardless of whether the object moves to [Spec, vP] or [Adjunct, vP] for avoiding a PIC violation, it can never move to an IP-adjoined position when it moves further to [Spec, CP]. Chomsky (1986) stipulates that IP-adjunction on the way to [Spec, CP] is disallowed. The stipulation can be derived by the anti-locality condition on movement.

Thus, an object that undergoes wh-movement to [Spec, CP] must move from a vP -edge position to [Spec, CP] without stopping by an IP-adjoined position. Then, as in the structure (23), the object cannot retain its ϕ -features at [Spec, CP] if the

subject occupies [Spec, IP].^{7,8}

$$(23) \quad \left[{}_{\text{CP}} \text{ what-}[\text{wh}, \phi \dots] \text{ C}^0 \text{---} \left[{}_{\text{IP}} \text{ Mary-}[\phi \dots] \text{ I}^0 \text{---} \left[{}_{\text{vP}} \text{ what-}[\text{wh}, \phi \dots] \text{ Mary-}[\phi \dots] \right. \right. \right. \right. \\ \left. \left. \left. \left. v^0 \left[{}_{\text{VP}} \text{ V}^0 \text{ what-}[\text{wh}, \phi \dots] \right] \right] \right] \right] \right]$$

⁷Since the copy of *who* in [Spec, CP] does not have ϕ -features in the structure (23), one may wonder how it is pronounced in that position. I assume that a lexical item is a bundle of phonological features, semantic features and formal features (Chomsky 1995, 2000) and that information on how to pronounce the item is determined by phonological features, whose value of the lexical item may be inherently determined or specified after ϕ -feature agreement/Case checking (Obata 2010). Since, the locality condition on pied-piping is relevant to formal features, but not to phonological ones and semantic ones, a moved element can carry its phonological features and semantic features to the final landing site. Therefore, a copy even without ϕ -features can be pronounced at the position. Thanks to David Adger and Omer Preminger (p.c.) for bringing this issue to my mind.

⁸In the structure (23), the copy of *who* in [Spec, CP] and the one in the *vP*-edge position do not have the same set of formal features. Norbert Hornstein (p.c.) pointed out that if the two copies of the same element have different sets of features, a question arises as to how the two copies are identified as links of the same chain. One possibility is that identification of links of a chain is established by using indexes, though introducing indexes in the course of the derivation violates the Inclusiveness Condition (Chomsky 1995). Another possibility is that the identification is ensured in terms of a *subset* relation, rather than an equal-set relation. That is, instead of stating that two copies are links of a chain iff the set of features of the copies are identical, I assume the following.

- (i) a copy α and a copy β are links of a chain iff a set of features of α is a sub set of a set of features of β .

Thanks to Miki Obata (p.c.) for suggesting this possibility.

As we have seen so far, given the two conditions, the locality condition on generalized pied-piping (1) and the anti-locality condition on movement (2), a moved element can carry its formal features to some positions but cannot to other positions. This is the theory of generalized pied-piping proposed in this thesis. In the next section, I discuss some backgrounds of the two conditions.

2.3 Background of the Adopted Assumptions

2.3.1 Locality condition on generalized pied-piping

Chomsky (1995) claims that when an element Ψ undergoes a movement that is triggered by a feature Φ , pied-piping of formal features of Ψ other than Φ takes place *automatically*. Ura (2001) interprets this claim as meaning that formal features of Ψ other than Φ can be pied-piped to the landing site as free riders without any cost. That is, pied-piping of formal features is cost-free and insensitive to any kind of syntactic constraints. I call this hypothesis “generalized pied-piping of formal features” in this thesis.

Contrary to the hypothesis of generalized pied-piping of formal features, Ura (2001) proposes that generalized pied-piping of formal features is not cost-free but subject to a locality condition. The primary motivation for Ura’s (2001) proposal is to derive an instance of the ban on Improper Movement, which is a generalization that a movement from \bar{A} -position to A-position is disallowed.⁹

⁹The ban on Improper Movement is discussed in Chomsky 1973 for the first time. Chomsky (1973), in addition to Specified Subject Condition (ia) and Tensed S Condition (ic), gives a rule

Let us look at the sentences in (24), which are examples of a kind of Improper Movement.

- (24) a. *Who was questioned it was told that Mary left? (Ura 2001:171)
 b. *Who was expected that it was told that Mary left? (Ura 2001:178)

The ungrammaticality of sentences like (24) can be attributed to a violation of the ban on Improper Movement.¹⁰ That is, in the sentences, the wh-phrase *who* first undergoes \bar{A} -movement to the embedded [Spec, CP] and then undergoes A-movement to the matrix [Spec, IP], and the second movement from an \bar{A} -position that prohibits a movement from Comp to non-Comp position, as stated in (ib).

- (i) No rule can involve X, Y in the structure ...X ..._[α ...Z ...WYV ...] ... where
 a. Z is the specified subject of WYV or
 b. Y is in Comp and X is not in Comp or
 c. Y is not in Comp and α is a tensed S Chomsky (1973:244)

¹⁰Howard Lasnik (p.c.) points out that there is another factor that makes the sentence (24-a) ungrammatical: it is ungrammatical because the complement clause of the predicate *question* is not a question form. As shown by the unacceptable sentence (i), a sentence is unacceptable even without a configuration of Improper Movement if the predicate *question* take a complement clause whose Spec is not filled by a wh- element/operator.

- (i) *It was questioned [(that) it was told to John that Mary left].

Thus, the example (24-a) is not a good example of Improper Movement. A better example is as given in (24-b), where such a selectional requirement is satisfied.

- (ii) It was expected [(that) it was told to John that Mary left].

to an A-position is counted as an Improper Movement.

- (25) $[_{CP} \text{ who}_i [_{IP} t_i \text{ was questioned/expected } [_{CP} t_i \text{ that it was told to } t_i \text{ that Mary left }]]]?$
- $\xrightarrow{\text{A-movement}}$
 $\xrightarrow{\text{A'-movement}}$

Ura (2001) points out that without the ban on Improper Movement, the unacceptable sentences in (24) could wrongly be derived under the assumption of generalized pied-piping of formal features proposed in Chomsky (1995b).

- (26) *Generalized Pied-Piping of formal features* (Chomsky 1995)

“As long as a formal feature Φ of a category Ψ is legitimately attracted in accordance with the definition of Attract, other formal features of Ψ can also be pied-piped together with Φ , as free-riders, to the target.”

(Ura 2001:170)

If pied-piping of formal features is cost-free as assumed in Chomsky (1995), the wh-phrase *who*, which is base-generated in the object position of *tell* in the unacceptable sentence in (24), can move to the embedded $[_{\text{Spec}}, \text{CP}]$ pied-piping every formal feature, as illustrated in (27).

- (27) $\text{was questioned/expected } [_{CP} \text{ who}_{i-[\text{wh}, \text{D}, \phi \dots]} \text{ (that) it was told } t_i \text{ [that Mary left }]]$
- $\xrightarrow{\text{movement}}$

Now, assuming that movement to $[_{\text{Spec}}, \text{IP}]$ is triggered by checking of D-feature, the wh-phrase *who* in the embedded $[_{\text{Spec}}, \text{CP}]$ can be a target of a movement to

the matrix [Spec, IP] because it has a D-feature.

- (28)
$$\begin{array}{c} \text{[IP } \text{who}_i\text{-[wh,D,\phi...]} \text{ was questioned/expected [CP } \text{t}'_i \text{ (that) it was told t}_i \text{ [that} \\ \uparrow \text{Mary left]]]} \end{array}$$

Note that each step of the movements satisfies a locality condition such as the Minimal Link Condition or Attract F under the framework of (Chomsky 1995).

- (29) *The Minimal Link Condition* (Chomsky 1995:295)

A longer link from α to K cannot be formed if there is a shorter legitimate link from β to K.

- (30) *Attract F* (Chomsky 1995:297)

K attracts F if F is the closest feature that can enter into a checking relation with a sublabel of K.

Also, because the Case of wh-phrase *who* in the [Spec, CP] has not been checked (or assigned) yet, the movement of *who* to the matrix [Spec, IP] satisfies a requirement of *greed* (Chomsky 1995) or *the activation condition* (Chomsky 2000) such that an element can undergo movement only if it has an unchecked feature.

Thus, under the assumption that pied-piping of formal features is totally cost-free as proposed in Chomsky's (1995), the unacceptable sentence could be generated, and we need the ban on Improper Movement to capture the ungrammaticality of the sentence. Note, however, that the ban on Improper Movement is just a generalization, and it is unclear why movement from \bar{A} -position to A-position is disallowed.

Therefore, the unacceptability of sentences such as (24) need a more principled explanation. Ura (2001) argues that if generalized pied-piping of formal-features is not cost-free but subject to an economy principle such as relativized minimality, it is possible to account for the unacceptability of sentences as in (24) without recourse to the ban on Improper Movement. To block (an instance of) Improper Movement, Ura proposes the condition (31), which I call “the locality condition on generalized pied-piping” in this paper.¹¹

(31) *Locality Condition on Generalized Pied-Piping*

A formal feature cannot be pied-piped as a free rider if there is an intervening matching feature, where α structurally intervenes between β and γ iff (i) α c-commands β and (ii) γ c-commands α .

Given the locality condition on generalized pied-piping in (31), the unacceptability of the sentences in (24) can be explained without resorting to the ban on Improper Movement. Let us consider a derivation of the sentence (24-a) with the locality condition on generalized pied-piping. In the derivation, the embedded wh-phrase

¹¹Under the framework of Chomsky (1995:Chapter 4) and Ura (2001), not only a category but also a feature can have a c-commanding relation with another category/feature. I adopt this assumption in this thesis. Assuming that a lexical item is a bundle of features (Chomsky 1995), *c-command* by a feature/category can be defined as follows

- (i) a. A lexical item α is a bundle of features BF_α .
- b. A feature/category of a lexical item α c-commands β iff every category that dominates BF_α also dominates BF_β .

who, first, moves to the embedded [Spec, CP]. In this case, as illustrated in (32), the wh-object *who* cannot pied-pipe its D-feature and ϕ -features to the landing site, because the movement crosses an intervening D-feature and ϕ -features of the embedded subject *it*, and the locality condition on generalized pied-piping blocks *who*'s pied-piping of the features.

$$(32) \quad \text{was questioned } [_{CP} \text{ who-}_{[wh,D,\phi\dots]} [_{it-}_{[D,\phi\dots]} \text{ was told } t_i \text{ [that Mary left]}]]$$

\uparrow
 *pied-piping of D, ϕ

Thus, the copy of *who* in the embedded [Spec, CP] lacks a D-feature and ϕ -features, so it cannot have a checking relation with the matrix I^0 (or cannot be Attracted by I^0).

$$(33) \quad *[_{I^0-}_{[D,\phi]} \text{ was questioned } [_{CP} \text{ who}_{i-}_{[wh,D,\phi\dots]} \text{ it-}_{[D,\phi\dots]} \text{ was told } t_i \text{ [that Mary left]}]]$$

Therefore, a movement of *who* in the embedded [Spec, CP] to the matrix [Spec, IP] is disallowed in (33). That is why the sentence (24) is ungrammatical. Thus, as Ura (2001) proposes, given the locality condition on generalized pied-piping, it is possible to block an instance of Improper Movement.

Note, however, that there is another type of Improper Movement, as exemplified in (34).

$$(34) \quad \text{a. } *Who_i \text{ was decided } [_{CP} t'_i [_{IP} t_i \text{ to leave for Osaka}]]. \quad (\text{Ura 2001:175})$$

- b. *Who_i seems [_{CP} t'_i [_{IP} t_i is clever]]?

Contrasted to the case of (24), where an object undergoes Improper Movement, a subject undergoes Improper Movement in the examples in (34). Ura (2001) argues that the ungrammaticality of the sentence (34-a) is attributed to either a failure of checking of null Case of I⁰ or a violation of the locality condition on generalized pied-piping due to the presence of intervening PRO under the theory of null Case (Chomsky and Lasnik 1993, Martin 1996, Watanabe 1993). That is, given the assumption that the infinitival I⁰ has a null Case that must be checked off by a null element PRO, the overt DP *who* cannot be a target of Attraction to the embedded [Spec, IP].¹² Therefore movement of *who* to [Spec, IP] as in (35-a) does not occur. Instead, PRO must occupy the [Spec, IP] to satisfy a Case-checking requirement of the infinitival I⁰, as in (35-b). Ura (2001) argues that given the locality condition

¹²The Infinitival I⁰ whose maximal projection is selected by an ECM predicate does not have null Case, as shown by the following examples.

- (i) a. *John believes [PRO to be intelligent].
b. John believes Mary to be intelligent.

One possible factor that distinguishes the infinitival I⁰ with null Case and the one without it is presence/absence of “unrealized” tense in the sense of Stowell (1982), as argued in Martin (1992); the infinitival I⁰ bearing “unrealized” tense has a null Case, while the one without it does not.

Another possibility is that the existence of C⁰ is relevant to having a null Case, as argued in Watanabe (1993, 1996); the infinitival I⁰ has a null Case when its maximal projection is selected by C⁰, while it does not have the Case when there is no C⁰ that selects its maximal projection.

on generalized pied-piping, *who*, when it moves to the embedded [Spec, CP], cannot pied-pipe its D-feature (and ϕ -features) to the landing site because of the D-feature (and the ϕ -features) of PRO in [Spec, IP], as illustrated in (35-c).

- (35) a. *was decided [CP [IP \uparrow to [_{vP} *who* leave for Osaka]]]
 b. was decided [CP [IP PRO to [_{vP} *who* leave for Osaka]]]
 c. *was decided [CP *who*_i-[_{wh,D, ϕ ...}] [IP PRO-_[wh,D, ϕ ...] to [_{vP} *t_i* leave for Osaka]]]
 \uparrow

Since *who* in the [Spec, CP] does not have a D-feature, it cannot be Attracted by the matrix I^0 , which makes a derivation like (34-a) disallowed.

- (36) *[\downarrow I^0 was decided [CP *who*_i-[_{wh,D, ϕ ...}] PRO-_[D, ϕ ...] to *t_i* [leave for Osaka]]]

Therefore, the ungrammaticality of sentences like (34-a) can be explained given the locality condition on generalized pied-piping under the theory of null Case.

As for the unacceptability of the sentence (34-b), it can be attributed to the generalization that movement from a Case-position to another Case-position is disallowed.¹³ That is, in the example (34-b), the wh-element *who* has already checked its Case feature at the embedded [Spec, IP]. Therefore movement to the matrix [Spec, IP], which is also a Case position, is disallowed.

Thus, ungrammaticality of some instances of improper movement can be de-

¹³The generalization is explained as a violation of *greed* (Chomsky 1995) or the Activation condition (Chomsky 2000).

rived by the locality condition on generalized pied-piping. In addition to the cases of improper movement, Ura (2001) argues that some other phenomena in British English and French can be explained by the locality condition on generalized pied-piping (see Ura 2001 for details).¹⁴

2.3.2 Anti-locality condition on movement

In the course of the study of generative grammar, it has been generally assumed that Movement (or Agree(ment) that causes a Movement) is dominated by some locality condition, such as the Minimality Condition (Chomsky 1986), Relativized Minimality (Rizzi 1990), the Minimal Link Condition (Chomsky 1995), and the Defective Intervention Condition (Chomsky 2000). A general assumption is as in (37).

(37) Movement must be short.

For example, in a configuration as in (38), where α asymmetrically c-commands β and β asymmetrically c-commands γ , γ cannot move to α skipping β if β is a potential landing site for γ 's movement to α , or β is a potential target for a movement to α .

¹⁴Tanaka (2004) argues against the locality condition on generalized pied-piping. One crucial piece of evidence for Tanaka's (2004) argument is the fact that a fronted object wh-phrase agrees with C⁰ (which is called "wh-agreement") in some Bantu languages. As I will show in Chapter 3, however, wh-agreement in Bantu appears only when the subject is not in an intervening position, which supports the locality condition on generalized pied-piping.

- (38) $[\alpha \ [\beta \ [\gamma \]]]$, where α and β or β and γ are the same type.
- *
↑

While it is generally assumed that Movement must be short on the one hand, some studies argue that Movement must not be too local/short on the other hand (Fukui 1993; Saito and Murasugi 1999; Koizumi 1993, 2000; Bošković 1994, 1997b, 2005; Ishii 1999; Grohmann 2000; Abels 2003ab).

- (39) Movement must not be too local/short.

Among them, let us look at Abels' (2003a, 2003b) study on Anti-locality. Assuming that CP and *v*P are Phases (Chomsky 2000), Abels (2003a, 2003b) points out that while extraction out of an XP that is a complement to a phase (i.e., IP and VP) is possible, extraction of the complement XP itself is disallowed. It is well known that movement of an IP is disallowed, which is exemplified as in (40).

- (40) *German*
- a. Dass Peter liest, habe ich nicht gesagt.
that Peter reads, have I not said
'I didn't say that Peter was reading.'
 - b. *Peter lest, habe ich nicht gesagt, dass.
Peter reads have I not said that
Intended: 'I didn't say that Peter was reading.' (a-b, Abels 2003a:9)

As the acceptability of the sentence (40-a) shows, a clausal complement can be preposed. Note, however, that as the unacceptability of the sentence (40-b) shows, the clausal complement cannot be preposed without a complementizer, which suggests

that IP cannot be preposed. As well as the case of IPs, VPs are not able to undergo movement, as suggested by the following examples.

- (41) a. John₁ knows that [pictures of himself_{1/2}]_i Bill₂ likes t_i.
b. John₁ knows that [criticize himself_{*1/2}]_i Bill₂ never will t_i.
(a-b, Huang 1993:110-111)

In the example (41-a), the anaphor *himself* can be coreferential either with the matrix subject *John* or with the embedded subject *Bill*. In the example (41-b), on the other hand, the anaphor must be coreferential with the embedded subject *Bill*. Following Huang's (1993) analysis, the unavailability of *John* as the antecedent of *himself* in (41-b) suggests that there should be a trace of *Bill* in the fronted element in the sentence. This suggestion is compatible with the assumption that the fronted element is a *vP*, but incompatible with the assumption that it is a *VP*. That is, as illustrated in (42-a), if the fronted element would be a *VP*, the binding domain of *himself* should be the matrix IP (or the matrix *vP*), so it cannot be explained why *John* cannot be the antecedent of *himself*. On the other hand, as shown in (42-b) if the fronted element is a *vP*, which contains a trace of *Bill*, the binding domain of *himself* should be the fronted *vP*, and therefore only *Bill* can be the antecedent of *himself*.

- (42) a. John₁ knows that [_{VP} criticize himself_{1/2}]_i Bill₂ never will t_i.
b. John₁ knows that [_{vP} t₂ criticize himself_{*1/2}]_i Bill₂ never will t_i.

Thus, given the Predicate Internal Subject Hypothesis (Koopman and Sportiche 1991, Fukui and Speas 1986, Fukui 1986, Kitagawa 1986, Kuroda 1988, a.o.), the binding fact in (41) suggests that VPs cannot undergo movement.

Note that movement out of an IP and a VP is generally possible given the fact that an element can undergo a wh-movement or a raising out of an IP and/or a *v*P. Therefore, there is a gap between movement out of IP/VP and movement of IP/VP itself; although the former is possible, the latter is impossible.

Pointing out that IPs and VPs are complement to a phase Head with the assumption that CPs and *v*Ps are phases (Chomsky 2000), Abels (2003a, 2003b) makes the following generalization, which states that movement of an XP that is a complement to a phase Head is impossible.¹⁵

(43) $^*[\alpha \text{ t }]$, where α is the head of a phase. (Abels 2003a:9)

Abels (2003a, 2003b) proposes that the generalization (43) can be explained given an anti-locality condition that prohibits too local movements in tandem with the

¹⁵Abels (2003a, 2003b) observes that there is a contrast between extraction out of an NP which is complement to P and extraction of such an NP itself; in some languages that disallow P-stranding, such as Serbo Croatian, extraction out of an NP that is a complement to P is possible, while extraction of such an NP itself is impossible.

- (i) a. * [P t]
b. $\sqrt{[P \text{ [... t ...]}]}$

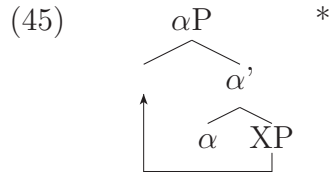
Abels (2003a, 2003b), assuming that P is a Head of a phase, argues that this contrast can be incorporated in the generalization in (43).

PIC (Chomsky 2000).

(44) *The Phase-Impenetrability Condition (PIC)* (Chomsky 2000)

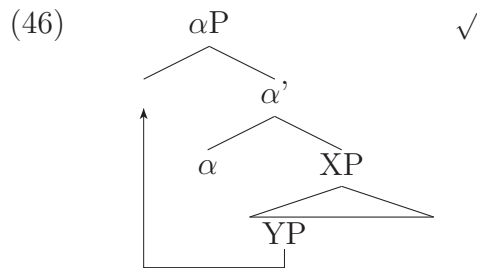
In phase a with head H , the domain of H is not accessible to operations outside a , only H and its edge are accessible to such operations.

Given the PIC, in order to move out of the domain of a phase, an element must first move to an edge position of the phase. Therefore, an XP complement to a phase Head α must move to a Spec position of the α P. Abels (2003a, 2003b) argues that such a movement from a Complement to a Specifier within the same α P is too local to take place.



Therefore, the XP cannot move out of the αP , and that is why an XP Complement to a phase Head can never undergo a movement at all.

A movement of an element inside an XP complement to a phase Head, on the other hand, is possible, because such a movement is not too local.



Thus, the anti-locality condition that disallows a movement from a Complement to a Specifier in the same maximal projection can derive the generalization (43) in tandem with the PIC.

As for the reason why a movement from a Complement to a Specifier within the XP is counted as too local, Abels (2003a, 2003b) argues that, assuming that movement is a last resort operation so that it can have a more local checking relation with a Head, a Complement to a Head X is local enough to have a checking relation with the X, so it does not have to move to the XP's Specifier position. Therefore, given the assumption that movement is a last resort operation, such a movement must not take place.

Thus, the anti-locality condition proposed in Abel's studies (2003a, 2003b) states that Movement within a checking domain is disallowed. Given that a checking domain is a minimal domain defined in Chomsky (1995) as in (3), the anti-locality condition is defined as follows.

(47) *Anti-locality condition on Movement*

Movement within a minimal domain is disallowed.

Note that Abels (2003a, 2003b) assumes that a movement is a last resort operation and triggered by a requirement for having a checking relation with a Head. As I discussed in Section 6.3.4, I assume that Japanese scrambling is a purely optional movement without any trigger for the operation, which is a widely-held view in studies of Japanese syntax (Kuroda 1988; Saito 1989, 2004; Fukui 1993; Abe 1993; Saito

and Fukui 1998). In this thesis, I propose that not only a movement with a trigger but also one without it are subject to the anti-locality condition so that binding phenomena in Japanese can be accounted for without resorting to A/ \bar{A} -distinction. Given this proposal, it is problematic how anti-locality in the case of movement without checking is explained under Abels' (2003a, 2003b) analysis. Moreover, under the current framework after Chomsky (2000, 2001), feature checking (i.e. Agree in the framework) can take place in-situ without any movement. In this framework, movement (i.e. Move) and checking (i.e. Agree) are independent from each other. For this reason, Abels' (2003a, 2003b) analysis of anti-locality is incompatible with such frameworks.¹⁶

In regard to this matter, following Koizumi (1993, 2000), the anti-locality property that follows from the condition (47) can be derived independently from feature checking. Koizumi (1993, 2000) proposes the condition stated in (48) assuming the definition of equidistance as stated in (49).

¹⁶Bošković (2005) gives the following definition for the anti-locality condition so that it is compatible with the frameworks that assume Agree system.

(i) *Anti-locality Condition on Movement (ver.2)*

Each chain link must be at least of length 1, where a chain link from A to B is of length n if there are n XPs that dominate B but not A. (Bošković 2005)

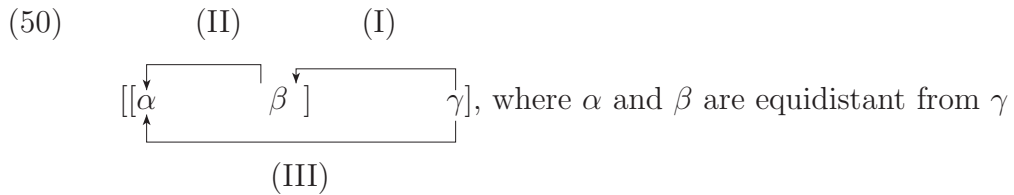
Given that XP in the definition is a full category, but not a segment, and that the definition of domination is as in (4), the anti-locality condition in (47) and the one in (i) have the same empirical coverage (i.e., what the two definitions derive is exactly the same), though they conceptually differ from each other.

(48) *No Vacuous Links* (Koizumi 2000:279)

*movement from α to β if α and β are equidistant from γ .

(49) If α and β are in the same minimal domain, they are equidistant from γ .
(Chomsky 1995:184)

The Anti-locality condition (47) and Koizumi’s (1993, 2000) condition (48) state almost the same thing; they are logically equivalent unless there is a case where α and β are equidistant from γ even if they are not in the same minimal domain. Koizumi (1993, 2000) argues that the condition is conceptually motivated. As illustrated in (50), given that α and β are equidistant from γ , the length of chain link I and the length of the link III are the same. This renders the length of the chain link II virtually “zero”. Because such a chain link with “zero” length is superfluous, the formation of the link II should be disallowed.



Given Koizumi’s (1993, 2000) argument, the ban on movement within a minimal domain is conceptually motivated regardless of whether a movement involves feature checking or not. Therefore, it can be reasonably concluded that the anti-locality condition (47) constrains all movements regardless of whether a movement involves a checking relation or not. As discussed in this section, the anti-locality Condition stated in (47) and the condition, *No Vacuous Links*, (Koizumi 1993,

2000) and Bošković’s (2005) anti-locality condition stated in (i) in footnote 16 in this chapter are almost same in their empirical coverage. In this thesis, I use the definition (47) for convenience because I use the notion of “minimal domain” also for the locality-condition on generalized pied-piping, but either definition can be used to achieve the purpose of this study.¹⁷

¹⁷Grohman (2000) develops a theory of anti-locality differently from our condition in (47). Assuming the three Prolific Domains as defined in (i), Grohman (2000) proposes the condition (ii), by which movement of a maximal projection within the same Prolific Domain is disallowed.

(i) *The concept of Prolific Domain ($\Pi\Delta$)* (Grohman 2000:55)

- a. *θ -domain*: the part of the derivation where theta relations are created
- b. *ϕ -domain*: the part of the derivation where agreement properties are licensed
- c. *ω -domain*: the part of the derivation where discourse information is established

(ii) *Condition on Domain Exclusivity (CDE)* (Grohman 2000:61)

An object O in a phrase marker must have an exclusive Address Identification AI per Prolific Domain $\Pi\Delta$, unless duplicity yields a drastic effect on the output.

- i. An AI of O in a given $\Pi\Delta$ is an occurrence of O in that $\Pi\Delta$ at LF.
- ii. A drastic effect on the output is a different realization of O at PF.

Contrasted to our condition (47), which is category-sensitive, Grohman’s (2000) anti-locality is domain-sensitive. I adopt the condition (47) rather than Grohman’s (2000) because the notion of categories is primitive in syntax, while the one of the domains assumed in Grohman (2000) is not.

Note, however, that under our approach, a violation of anti-locality can be avoided by inserting an additional maximal projection in an appropriate position. In this point, our condition seems to be less falsifiable. I assume that no extra maximal projection is introduced in the course of the derivation unless it affects meaning or sound.

2.4 Checking, Movement, and Generalized Pied-piping of Formal Features under the Current Framework

In this thesis, I adopt the copy theory of movement (Chomsky 1993, 1995), according to which a trace of a moved phrase is a copy of the element, but I do not adopt a specific theory for how movement takes place. I use the words “movement” in a theory-neutral way. That is, “movement” means a (complex) syntactic operation by which copies of a syntactic object appear in different positions. Note, however, that the notion of *generalized pied-piping* is developed and used under Chomsky’s (1995) framework, but it is no longer used under the current framework after Chomsky

Note also that even though the condition (47) and Grohman’s (2000) are different, it can be possible that what is derived under our approach is also derived under Grohman’s one by assuming that adjunction makes it possible that an element belongs to two different domains at the same time. Take the impossibility of IP-adjunction on the way to [Spec, CP] for example. Under our approach, the anti-locality condition (47) prohibits IP-adjunction before moving to [Spec, CP] because an IP-adjoined position and [Spec, CP] are within the same minimal domain. Under Grohman’s (2000) approach, IP belongs in ϕ -domain and CP belongs in ω -domain. Then, if IP is the highest maximal projection in ϕ -domain, an IP-adjoined position is within ϕ -domain and within ω -domain given the assumption that an XP-adjoined position is within the domain α of XP and the next higher domain β if XP is the highest maximal projection in the domain α . Thus, Grohman’s (2000) anti-locality condition prohibits movement from an IP-adjoined position to [Spec, CP] because both positions are within the same ω -domain. Thus, although I use the condition (47) in this thesis, it may be possible that the phenomena discussed in this thesis can also be captured using Grohman’s (2000) anti-locality.

(2000, 2001) because the two frameworks assume different operations for syntactic movement. Under Chomsky’s (1995) framework, movement is a composite operation that consists of Attract F and following pied-piping, so the mechanism of generalized pied-piping is developed within this framework. However, after Chomsky (2000, 2001), movement, which is called Move, is understood as a different operation, which consists of Merge and Copy (Hornstein 2009, a.o.). Under this framework, the notion of “pied-piping of (formal) features” is no longer used. Thus, in this section, I discuss how the locality condition on generalized pied-piping can be understood under the current framework (i.e., after Chomsky 2000, 2001).

Informally, “pied-piping of a (formal) feature” means “movement of a (formal) feature”. That is, it is a syntactic operation by which copies of a feature of a syntactic object appear in different positions. Then, the locality condition on generalized pied-piping is understood as a condition by which movement of a formal feature is disallowed if there is an intervening matching feature. In Section 2.4.1, I discuss how such a condition is formally defined under the current framework after Chomsky (2000, 2001).

In Section 2.4.2, I also discuss my proposal on how feature checking takes place.

2.4.1 Movement and generalized pied-piping of formal features under the current framework

Under Chomsky’s (1995) framework, movement of α takes place for a necessity of feature checking when a Head has an (uninterpretable) feature that must be checked. Under this framework, movement is decomposed into the two syntactic operation, “Attraction” of a feature F of α and pied-piping of the other features of α that accompanies the Attraction.

(51) *Attract F* (Chomsky 1995:297)

K attracts F if F is the closest feature that can enter into a checking relation with a sublabel of K.

As illustrated in (52-a), when the Head X^0 has feature α that must be checked, it finds a closest matching feature of YP and Attracts the feature to its checking domain, i.e., its Spec (or Adjunct to the Head). This attraction accompanies pied-piping of other features of YP and its category to the landing site (if overt movement is required) as illustrated in (52-b). This is “movement” operation under Chomsky’s (1995:Chapter 4) framework. After the movement, YP checks X^0 ’s α -feature in Spec-Head configuration, as illustrated in (52-c).

(52) a.

[XP

Attract α

- b. Pied-piping of the other features/category
- $$[_{XP} \boxed{YP-[\alpha, \beta, \gamma]} X^0-\alpha [_{ZP} WP-\gamma [\dots \boxed{YP-[\alpha, \beta, \gamma]}]]]$$
- ↑
- c. checking
- $$[_{XP} YP-[\alpha, \beta, \gamma] X^0-\alpha [_{ZP} WP-\gamma [\dots YP-[\alpha, \beta, \gamma]]]]$$

Thus, under this framework, checking always involves movement and takes place in Spec-Head configuration.¹⁸

Chomsky (2000, 2001), by contrast, proposes a new framework different from the one in Chomsky (1995). Under this framework, feature checking takes place under the syntactic operation called *Agree*. Differently from Spec-Head agreement under Chomsky (1995), checking/agreement can take place just under a c-command relation. That is, when a Head X^0 , which is called “Probe”, c-commands YP, which is called “Goal”, X^0 can Agree with YP, by which must-be-checked features on X^0 or/and YP are checked/deleted.

(53) Agree

$$[_{XP} X^0-\alpha [_{ZP} WP-\gamma [\dots YP-[\alpha, \beta, \gamma]]]]$$

Since feature checking can takes place without movement in this theory, movement is triggered by another motivation. This is assumed to be satisfying an EPP-feature, which is possessed by a Head X^0 that triggers the movement and is satisfied by

¹⁸In the case of so-called “covert-movement”, only the relevant feature undergoes movement to adjoin to a Head.

putting a syntactic object in [Spec, XP].¹⁹

$$(54) \quad \begin{array}{c} \boxed{[_{XP} \text{ YP-}[\alpha, \beta, \gamma] \text{ X}^0\text{-}\alpha, \text{ EPP}]} \\ \uparrow \quad \downarrow \\ \boxed{[_{ZP} \text{ WP-}\gamma \text{ [. . . YP-}[\alpha, \beta, \gamma]]]} \end{array}$$

movement

Thus, under the framework of Chomsky (2000, 2001), the syntactic operation *Attract F* proposed in Chomsky (1995) is eliminated, so a movement operation assumed in this framework is different from the one assumed in Chomsky (1995). Under the framework of Chomsky (2000, 2001), a movement operation, which is called “Move”, is understood as a complex operations that consists of “Copy” and “Merge” (Hornstein 2009, a.o.). Merge is an operation that takes two different syntactic objects to combines them together into a syntactic object. Copy is an operation that makes a copy of a syntactic object that undergoes a movement. Then, when XP undergoes Move, a copy of XP is made, and that is combined with the syntactic unit already made in the derivation, as illustrated in (55).

(55) *Move under the framework of Chomsky (2000, 2001)*

- a. $[\quad [\dots \boxed{XP_i}] : \text{Copy } \boxed{XP_i}]$
- b. $[\boxed{XP_i} [\dots XP_i] : \text{Merge}]$

Note that in this theory, the notion of “generalized pied-piping” is no longer used. Let us, then, consider how generalized pied-piping of formal features and the

¹⁹Although Chomsky (2000) calls the trigger of movement “EPP-feature”, it is different from other formal features because the former is satisfied by Merge of a syntactic object in Spec, whereas the latter is checked via Agree.

locality condition on it stated in (56) can be understood under the current framework after Chomsky (2000, 2001).

(56) *Locality Condition on Generalized Pied-Piping*

A formal feature cannot be pied-piped as a free rider if there is an intervening matching feature.

Firstly, the hypothesis of generalized-piping of formal features such that pied-piping of formal features is cost-free is understood, under the current framework, as that Copy of formal features and Merge of them are cost-free. That is, as illustrated in the following, when an element YP undergoes movement triggered by EPP-requirement, once an agreement relation (which is called Agree) between a movement-trigger Head and YP is established, all of the other formal features of YP are Copied without any restriction and the created copy Merges to the landing site without any restriction.

- (57) a. $\left[_{XP} X^{0-\alpha, EPP} \left[_{ZP} WP^{-\gamma} \left[\dots YP^{-[\alpha, \beta, \gamma]} \right] \right] \right] : Agree$
- b. $\left[_{XP} X^{0-\alpha, EPP} \left[_{ZP} WP^{-\gamma} \left[\dots \boxed{YP^{-[\alpha, \beta, \gamma]}} \right] \right] \right] : Copy \boxed{YP^{-[\alpha, \beta, \gamma]}}$
- c. $\left[_{XP} \boxed{YP^{-[\alpha, \beta, \gamma]}} X^{0-\alpha, EPP} \left[_{ZP} WP^{-\gamma} \left[\dots \boxed{YP^{-[\alpha, \beta, \gamma]}} \right] \right] \right] : Merge$

Thus, the idea of the generalized pied-piping of formal features can be understood as cost-free Merge and Copy of formal features under the current framework.

On the other hand, Ura's (2001) proposal that generalized pied-piping of formal features is subject to a locality condition can be understood, under the current

framework, as that Copy of formal features is not cost-free but constrained in some way. One possible way to capture Ura's (2001) idea is to propose that when Copying YP, which means Copying a set of syntactic, semantic, and phonological features of YP, a formal feature other than the one involved in Agree cannot be Copied if it is c-commanded by an intervening matching feature. This idea can be formalized as in the condition (12).²⁰

(58) *Condition on Copy*

Copying a formal feature α is disallowed if it is c-commanded by a matching feature α that is not within a minimal domain of X^0 that has an unchecked EPP-feature.

(59) a. c-command

$$[_{XP} \quad X^0_{-\alpha, EPP} [_{ZP} \text{ WP-}\gamma \left[\dots \boxed{\text{YP-}[\alpha, \beta, \gamma]} \right]]] : \text{Copy } \boxed{\text{YP-}[\alpha, \beta, \gamma]}$$

b. $[_{XP} \boxed{\text{YP-}[\alpha, \beta, \gamma]} X^0_{-\alpha, \text{EPP}} [_{ZP} \text{ WP-}\gamma \left[\dots \text{YP-}[\alpha, \beta, \gamma] \right]]] : \text{Merge}$

²⁰Another possibility is that the locality on generalized pied-piping is a condition on chain, assuming that each individual feature of a moved element form a chain. That is, as illustrated in (i), when YP, which has the three features, α , β and γ , undergoes movement, each feature forms a chain, and in the case with the configuration (i), the chain of γ is blocked by the intervening γ feature of WP, which makes the sentence ungrammatical.

(i) $[_{XP} \boxed{\text{YP-}[\alpha, \beta, \gamma]} X^0_{-\alpha} [_{ZP} \text{ WP-}\gamma \left[\dots \text{YP-}[\alpha, \beta, \gamma] \right]]]$

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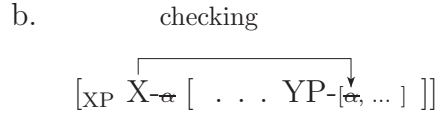
Note, however, that under this analysis, the condition is representational one and requires a trans-derivational framework. On the other hand, locality on generalized-pied-piping is due to a condition on Copy, a possibility of pied-piping is determined derivationally.

Thus, under the current framework, the hypothesis of generalized pied-piping of formal features and Ura's (2001) proposal are different from each other in whether Copy of formal features is cost-free or not. Note that the condition on Copy proposed here is more complex than the proposal that Copy is cost-free, and conceptually it is unclear why a c-commanding feature α blocks Copying the other matching feature. Therefore, theoretically, the hypothesis of generalized pied-piping of formal features appears to be superior to Ura's (2001) proposal under the current framework. However, the question arises as to which proposal is superior empirically. The rest of the chapters in this thesis are devoted to showing some empirical support for Ura's (2001) proposal. In Chapter 3, I examine wh-agreement phenomena found in Bantu-languages to show that a different language shows a different pattern of wh-agreement, and the pattern can be derived with the analysis proposed in this chapter. From Chapter 4 to Chapter 6, I discuss Weak Crossover phenomenon in English, Japanese and some other languages. With the proposal that only a copy with ϕ -features can be available for binding, the presence/absence of WCO effects in various situations in various languages can be accounted for under the proposed analysis without resorting to A/ \bar{A} -distinction. As I will discuss in Chapter 4, since A/ \bar{A} -distinction is not primitive and it is unclear what is the crucial factor that distinguishes A-positions from \bar{A} -positions, it is desirable not to have recourse to A/ \bar{A} -distinction for explaining syntactic phenomena. Thus, the present study lends an empirical support for Ura's (2001) proposal that pied-piping of formal features is not cost-free but subject to a locality condition.

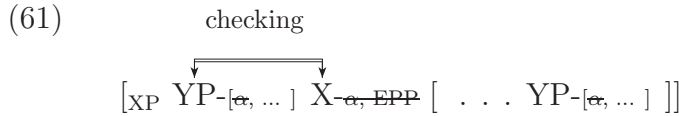
2.4.2 Feature checking under the proposed framework

In this thesis, I assume with Chomsky (2000, 2001) that feature checking/agreement takes place under a c-command relation.

(60) a. Feature checking/agreement takes place under a c-command relation.



Differently from Chomsky (2000, 2001), however, I propose that feature checking/agreement must take place in Spec-Head configuration if YP that has a checking relation with X moves to the domain of X to satisfy an EPP-requirement of X, as illustrated in the following.

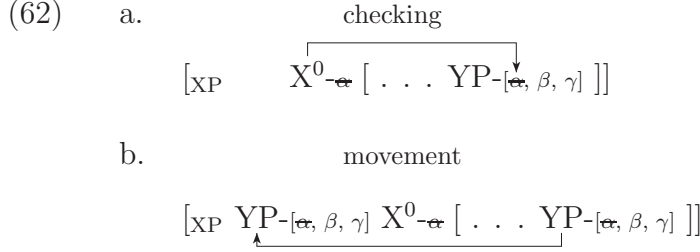


As discussed above, such a requirement for checking under Spec-Head configuration can be straightforwardly derived under the framework of Chomsky (1995) because every checking relation is established under Spec-Head configuration (when overt movement occurs).²¹

²¹In some phenomena like *there* constructions exemplified in (i), I⁰ agrees with an in-situ XP. Chomsky (1995) proposes that in such a case, only formal features, but not its category, undergo movement to adjoin to I⁰ to have a checking relation with I⁰.

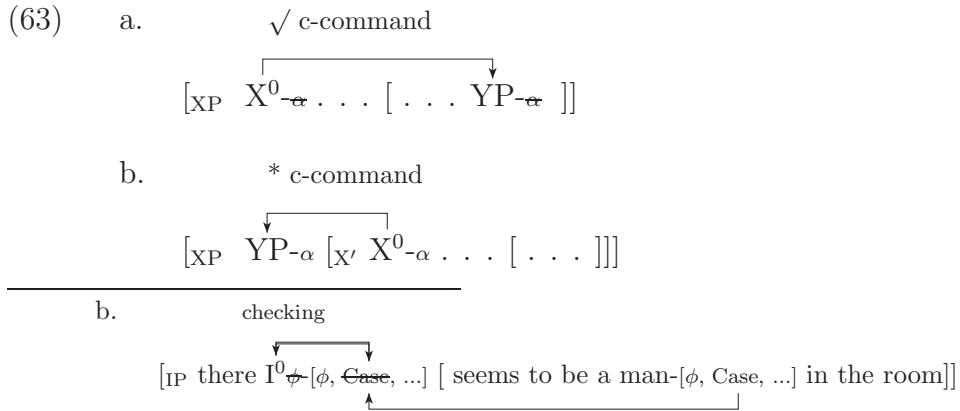
(i) a. There seems to be a man in the room.

Note, however, that under the theory of “Agree” proposed in Chomsky (2000, 2001), movement and checking/agreement are independent from each other; feature checking/agreement can take place without a movement.

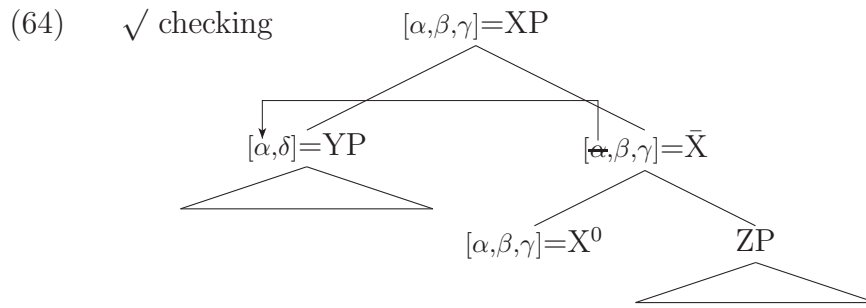


Therefore, the question arises as to how the notion of “Spec-Head feature checking/agreement” can be captured under the current framework.

First of all, I assume with Chomsky (2000, 2001) that feature checking between α and β takes place in the configuration where α c-commands β . Then, one may wonder how it is possible that X has a checking relation with YP in its Specifier since X^0 does not c-command the [Spec, XP], as illustrated in (63-b).



In this matter, adopting *Bare Phrase Structure Theory* (Chomsky 1995a,b), under which an lexical item is a bundle of feature and a label of the node created via Merge of α and β is either α itself or β itself, I propose that bar-level node, as well as a Head and a maximal projection can enter a checking relation.²² Given this proposal, an element in [Spec, XP] can have a checking relation with X by being c-commanded by \bar{X} .

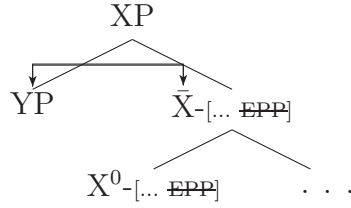


Moreover, I propose that an EPP-requirement is a requirement such that an EPP-feature possessed by α must be checked by β under the configuration where α and β mutually c-command each other. Given this proposal, when YP occupies [Spec, XP], it can check X's EPP feature under the mutual c-command relation between YP and \bar{X} , as in (65-a). Note, however, that if an EPP feature is checked under a mutual c-command relation, it would be possible that an EPP feature of X is checked under the mutual c-command relation between X^0 and its complement YP, as in (65-b).

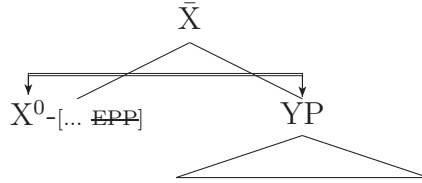
²²Contrary to this claim, Chomsky (1995) stipulates that bar-level nodes are inaccessible in the course of the derivation. However, theoretically it is unclear why it is so, and the null hypothesis is that bar-level nodes, as well as Heads and maximal projections, are accessible.

(65) *EPP checking under mutual c-command*

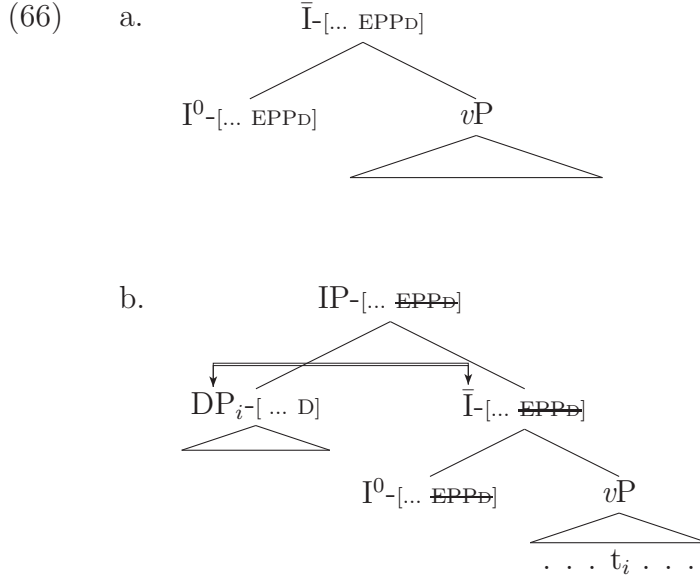
a.



b.



In general, an EPP-requirement is a requirement such that Spec-position must be occupied. However, if an EPP feature possessed by X could be checked by an element in its Complement, the proposed analysis for the EPP requirement does not capture such a property. Thus, I propose that EPP-features are subcategorized for types of formal features, by which it is determined what element can check the EPP feature. For instance, C has an EPP_{wh}-feature, which must be checked by an element that has a wh-feature, and I has an EPP_D-feature, which must be checked by an element with a D-feature. Given this proposal, C's EPP feature is not checked by its Complement IP since the IP does not have a wh-feature, and I's one is not checked by its complement *v*P since the *v*P does not have a D-feature. Then, C's EPP feature is checked by a wh-phrase with a wh-feature when it moves to [Spec, CP], and I's one is checked by a DP with D-feature when it moves to [Spec, IP].



Thus, the EPP requirement on X such that its Specifier must be occupied can be captured with the proposal that an EPP feature is checked under a mutual c-command relation.

With this analysis for EPP-feature checking, I propose the condition (67), by which feature checking between α and β always takes place in Spec-Head configuration when β satisfies α 's EPP requirement.

(67) Every checking between α and β must be done at the same time.

Let us look at how the requirement for feature checking under Spec-Head configuration is derived by the condition (67). Suppose that a lexical item X has α -feature and an EPP_α -feature that must be checked in the course of the derivation. In this situation, movement of an element YP with α -feature takes place first, and then every checking between X and YP (i.e., checking of the α -feature and the EPP_α -feature) takes place simultaneously as illustrated in (68), rather than each checking

is done separately as illustrated in (69).²³

(68) $\sqrt{\text{Simultaneous checking}}$

- (i) $[_{XP} YP-\alpha [_{X'-[\dots \alpha, EPP\alpha]} X^0-[\dots \alpha, EPP\alpha] [\dots YP-\alpha]]]$: Movement of YP
- (ii) $[_{XP} YP-\alpha [_{X'-[\dots \alpha, EPP\alpha]} X^0-[\dots \alpha, EPP\alpha] [\dots YP-\alpha]]]$: feature/EPP checking

(69) $\ast \text{Separate checking}$

- (i) $[_{XP} X^0-[\dots \alpha, EPP\alpha] [\dots YP-\alpha]]$: feature checking
- (ii) $[_{XP} YP-\alpha [_{X'-[\dots \alpha, EPP\alpha]} X^0-[\dots \alpha, EPP\alpha] [\dots YP-\alpha]]]$: Movement of YP
- (ii) $[_{XP} YP-\alpha [_{X'-[\dots \alpha, EPP\alpha]} X^0-[\dots \alpha, EPP\alpha] [\dots YP-\alpha]]]$: EPP checking

Thus, given the proposed analysis, when X has an EPP-feature and another feature that must be checked and both of the features are checked by an element YP, the checking must take place in Spec-Head configuration. Then, it follows from this analysis that if a subject DP moves to [Spec, IP] to satisfy I's EPP requirement, checking of ϕ -feature and Case-feature between the DP and I cannot take place when the DP is in [Spec, *v*P] but must take place when the DP is in [Spec, IP].

²³This condition might be due to an economical reason given that fewer steps are more economical. That is, simultaneous checking requires fewer steps than separate checking. However, in terms of amount of labor, simultaneous checking requires more amount of labor for a checking operation. Thus, it cannot be concluded that “simultaneous checking” is an economy condition without a conclusive theory under which a cost of a derivation is calculated.

Note that in this proposed analysis, it is possible that checking/agreement takes place not in Spec-Head configuration. That is, if a lexical item X has two features that must be checked, α -feature and EPP-feature, and checking of these two features are made by different elements respectively, then checking of α -feature can take place not in Spec-Head configuration but in the configuration where X c-commands YP with an α -feature. One example of this situation is *there*-constructions in English.

- (70) a. There seems to be a man in the room.
b. There seem to be men in the room. (a-b, Boeckx 2008:139)

As shown in (70), ϕ -feature agreement between I and a post verbal subject is possible in *there*-constructions. This means that I can undergo feature checking/agreement with a subject not in its Specifier, but in a c-commanding position. This is possible under the proposed analysis since in such a case, the subject itself does not check an EPP-feature of I, so it can have a checking relation with I in the in-situ position in a way that satisfies simultaneous checking.

- (71) a. $[_{IP} \text{ there } [I'-[\phi, EPP...]] I^0-[\phi, EPP...] \dots [\dots DP-[\phi, Case]]]$: Insertion of *there*
b. $[_{IP} \text{ there } [I'-[\phi, EPP...]] I^0-[\phi, EPP...] \dots [\dots DP-[\phi, Case]]]$: checking
-

Thus, in-situ checking/agreement is possible as far as an agreed-with XP does not check an EPP-feature.

As discussed so far, the notion of “Spec-Head agreement” can be captured with the proposed analysis under the framework assuming that checking/agreement takes place in a c-command relation independently from movement. Given this analysis, checking between α and β can potentially take place not in Spec-Head configuration. However, when β satisfies α ’s EPP requirement, every feature checking between α and β must be done in Spec-Head configuration. This is the proposed checking system that I adopt in this thesis. Under the proposed analysis, when X has a checking relation with YP in its Specifier, what undergoes feature checking with YP is not a Head X^0 , but a bar level node \bar{X} . However, in what follows I use the expression “feature checking in Spec-Head configuration” and the structure as in (72) for representing such a situation since readers may be more familiar to them.

$$(72) \quad \begin{array}{c} \text{checking/agreement} \\ \downarrow \overrightarrow{\downarrow} \\ [_{XP} \text{ YP } X^0 [\cdot \cdot \cdot]] \end{array}$$

2.5 Conclusion

In this chapter, I made a proposal on pied-piping of formal features by a moved element. My proposal is that it is determined by the two conditions, the locality condition on generalized pied-piping (73) and the anti-locality condition on movement (74), by which it is determined whether an element that undergoes movement can retain its formal features at the landing site or not.

(73) *Locality Condition on Generalized Pied-Piping*

A formal feature cannot be pied-piped as a free rider if there is an intervening matching feature.

(74) *Anti-locality Condition on Movement*

Movement within a minimal domain is disallowed.

In the following chapters, we will look at wh-agreement phenomena observed in Bantu languages and binding phenomena (especially, variable binding) in English, Japanese and some other languages. I will show that these phenomena can be accounted for with the analysis proposed in this chapter.

Chapter 3: Pied-Piping and Wh-Agreement in Bantu

3.1 Overview

In some languages, a complementizer represents a special morphological form in constructions involving so-called \bar{A} -movement such as wh-questions, clefts and relative clauses. For example, in Irish a complementizer appears as *goN* or *gurL* in declarative clauses, whereas it appears as *aL* or *arL* in wh-questions/relative clauses.

(1) *Declarative v.s. Wh-question in Irish*

- a. Deir siad **gurL** chum sé an t-amhrán sin.
say they COMP composed he that song
'They say he wrote that song.'
- b. Cé **aL** deir siad **aL** chum an t-amhrán sin.
who COMP say they COMP composed that song
'Who do they say wrote that song.' (a-b, McCloskey 1979:153)

(2) *Declarative v.s. Relatives in Irish*

- a. Dúirt sé **goN** gcuirfeadh sé ar mo chosa mé.
said he COMP would.put it on my feet me
'He said that it would put me on my feet.'
- b. an leabhar **aL** dúirt sé **aL** cuirfeadh ar mo chosa mé.
the book COMP said he COMP would.put on my feet me
'the book that he said would put me on my feet.'

(a-b, McCloskey 1979:152)

Such a phenomenon is called *wh-agreement* with the assumption that a fronted wh-phrase, operator or focus phrase agrees with a complementizer. As well as Irish, some Bantu languages show wh-agreement. For example, in Kinande, a fronted wh-phrase agrees with the following complementizer (or an agreement Head under C^0) in wh-questions.¹

(3) *Kinande*

- a. Iyondi **yo** Kambale alangIra?
 who(SG).1 CA.1 Kambale saw
 ‘Who did Kambale saw?’

¹Contrasted to Kinande, some languages do not show wh-agreement in wh-fronting. As exemplified in (ii), a fronted wh-phrase does not induce wh-agreement in Kiswahili.

(i) *Wh-in-situ in Kiswahili*

- a. Mtoto a-li-pig-a **nini**?
 child.1 SA.1-PAST-beat-FV what
 ‘What did the child beat?’
- b. Mtoto a-li-end-a **wapi**?
 child.1 SA.1-PAST-go-FV where
 ‘Where did the child go?’ (a-b, Muriungi et al. 2014:184)

(ii) *Wh-fronting in Kiswahili*

- a. Ni **nini** mtoto a-li-pig-a?
 COP? what child.1 SA.1-PAST-beat-FV
 ‘What did the child beat?’
- b. Ni **wapi** mtoto a-li-end-a?
 COP? where child SA.1-PAST-go-FV
 ‘Where did the child go?’ (a-b, Muriungi et al. 2014:184)

As well as Kiswahili, Kikuyu, Gichuka (Muringuri et al. 2014), Kitharaka (Muriungi 2005), Kinyarwanda, Eke Gusii (Ongarora 2008) do not show wh-agreement in wh-fronting.

- b. Aaahi **bo** Kambale alangIra?
 who(PL).2 CA.2 Kambale saw
 ‘Who did Kambale saw?’
- c. Ekihi **kyo** Kambale alangIra?
 what(SG).7 CA.7 Kambale saw
 ‘What did Kambale saw?’
- d. Ebihi **byo** Kambale alangIra?
 what(PL).8 CA.8 Kambale saw
 ‘What did Kambale saw?’ (a-d, Rizzi 1990:55)

Note that in Kinande (and other Bantu languages), the form of wh-agreement varies depending on noun class of the fronted wh-phrase. Given the widely-held view that noun class is classified by a set of ϕ -features, wh-agreement in Bantu languages is ϕ -feature agreement between C^0 and a preceeding wh-phrase.

As well as Kinande, another Bantu language Lubukusu shows wh-agreement by noun class in wh-questions and relative clauses.

(4) *Lubukusu*

- a. naanu **o**-w-a-tim-a?
 who.1 CA.1-SA.1-PAST-run-FV
 ‘Who ran?’
- b. siina **si**-sy-a-tib-a?
 what.7 CA.7-SA.7-PAST-run-FV
 ‘What got lost?’ (a-b, Wasike 2007:236)

However, differently from Kinande, wh-agreement appears only in subject extraction in Lubukusu; if wh-agreement appears in object extraction, the sentence/phrase becomes unacceptable.

- (5) **[Kumusaala papa kw-a-a-byaal-a] kwa-a-cho-il-e*
 tree.3 father.1 CA.3-SA.1-PAST-plant-FV SA.3-PAST-grow-PERF-FV
 ‘The tree which father planted has grown’ (Wasike 2007:49)

only if a subject (with ϕ -features) is not in an intervening position.

In this chapter, I show that (7) is supported by wh-agreement phenomenon found in Bantu languages. As shown by Kinande examples (3) and Lubukusu onse (4), some Bantu languages show wh-agreement in constructions involving so-called \bar{A} -movement. Assuming that noun class is determined by a set of ϕ -features and that wh-agreement in Bantu languages is established in Spec-Head configuration in CP, the presence of wh-agreement in the languages suggests that a fronted DP retains its ϕ -features in the domain of CP.

$$(8) \quad \text{wh-agreement}$$

$$[\text{CP wh-}[\text{wh}, \phi \dots] \overset{\text{C}^0}{\downarrow} [\text{IP} \dots]]$$

Now, given the corollary of the proposed theory on generalized pied-piping (7), our prediction on wh-agreement in Bantu languages is as in (9).

- (9) A subject is not in an intervening position when wh-agreement takes place in non-subject extraction.

In the following sections, I show that the prediction in (9) is borne out in Lubukusu, Kilega, Kinande and some other Bantu languages.

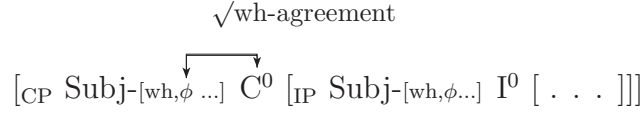
In Section 3.2, we will see that there is a subject/object asymmetry in wh-agreement in Lubukusu. As shown in (4) and (5), wh-agreement appears only in subject extraction. When an object wh-phrase is fronted, a derived sentence has a

form different from subject wh-questions as shown in (10); the object question has a pattern similar to cleft constructions as exemplified in (11).

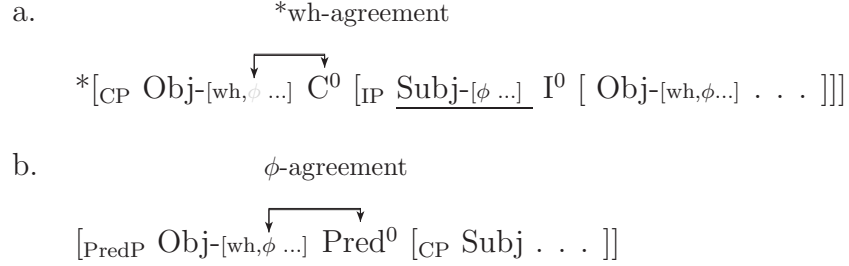
- (10) *Lubukusu*
- a. Naanu *(**o**)-w-a-kw-a?
 who.1 CA.1-SA.1-PAST-fall-FV
 ‘Who fell?’ (*Subject wh-question*: Wasike 2007:16)
- b. Naanu *(**ni-ye**) Nafula a-a-sim-a?
 who.1 PRED-1 Nafula.1 SA.1-PRES-love-FV
 ‘Who does Nafula love?’ (*Object wh-question*: Wasike 2007:224)
- (11) Babaana **ni-bo** ba-ba-a-khina-a
 children.2 PRED-2 CA.2-SA.2-PAST-fall-FV.
 ‘It is children who fell.’ (*Cleft*: Wasike 2007:76)

I will show that the subject/object asymmetry in wh-questions/relatives in Lubukusu can be explained under the present analysis. That is, wh-agreement is possible in subject wh-questions because subject can pied-pipe its ϕ -features to the domain of CP to have wh-agreement with C^0 as illustrated in (12), whereas it is impossible in object wh-questions because ϕ -features of the subject in [Spec, IP] are an intervener for the object’s pied-piping its ϕ -features to the domain of CP, so the object cannot retain its ϕ -features at [Spec, CP] as illustrated in (13-a). Thus, in the case where an object wh-phrase appears in the fronted position, the sentence is derived via clefting in which an object wh-phrase is base-generated in the front position and agrees with Head of PredP as illustrated in (13-b).

(12) *Subject wh-question in Lubukusu*

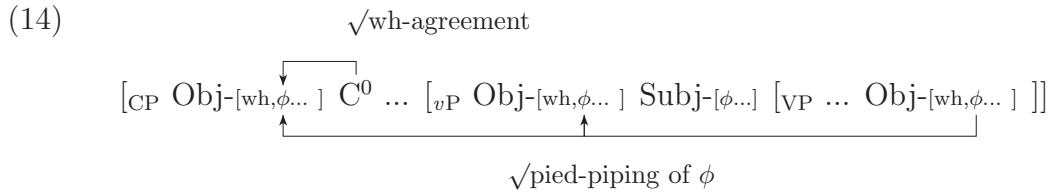


(13) *Object wh-question in Lubukusu*

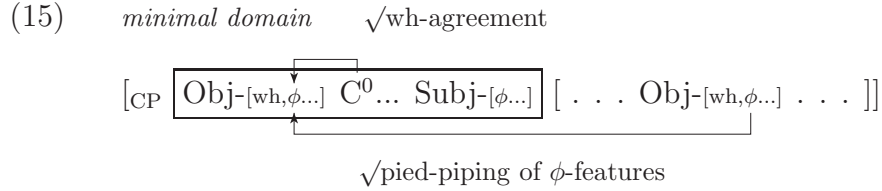


Contrasted to Lubukusu, Kilega and Kinande show wh-agreement even in non-subject extraction. As shown in the Kinande examples (3), a fronted object wh-phrase, as well as a subject wh-phrase, triggers wh-agreement. Now, remember that given the proposed analysis, our prediction is as in (9).

In section 3.3, I show that the prediction (9) is borne out in Kilega. That is, Kilega allows wh-agreement in non-subject extraction because subjects stay in [Spec, *v*P] when non-subject is fronted, so its ϕ -features may not be an intervener for an object's pied-piping its ϕ -features to the domain of CP.



Moreover, in section 3.4, I show that wh-agreement in non-subject extraction is possible in Kinande because subjects are in a position that is in the same minimal domain with the position to which a wh-phrase moves, so ϕ -features of the subject may not be an intervener for the pied-piping.



Thus, the different patterns of wh-agreement in Lubukusu, Kilega, and Kinande can be accounted for with the theory of generalized pied-piping of formal features proposed in Chapter 2.

3.2 Lubukusu

3.2.1 Subject/Object asymmetry in extraction in Lubukusus

Lubukusu is a Bantu language spoken in Western province and Rift Valley province in Kenya (Wasike 2007). As well as in some other Bantu languages, Lubukusu shows wh-agreement by class. Let us, first, look at declarative sentences in Lubukusu.

- (16) a. Wafula a-a-fun-a kumulyaango.
Wafula.1 SA.1-PAST-break-FV door.3
‘Wafula broke the door.’ (Wasike 2007:21)
- b. Nafula a-a-siim-a Wafula.
Nafula.1 SA.1-PRES-love-FV Wafula.1
‘Nafula loves Wafula.’ (Diercks 2010:85)

- (17) a. omwaana a-a-tim-a.
 child(SG).1 SA.1-PAST-run-FV
 ‘The child ran.’
- b. babaana ba-a-tim-a.
 child(PL).2 SA.2-PAST-run-FV
 ‘Children ran.’
- c. siitabu si-a-tib-a.
 book(SG).7 SA.7-PAST-run-FV
 ‘The book got lost.’ (a-c, Wasike 2007:236)

As shown by the examples in (16), the word order of Lubukusu is SVO and as shown by the ones in (17), Lubukusu has subject agreement (SA), which appears before a tense morpheme.²

In the case of subject wh-questions, an additional agreement morpheme appears before the subject agreement morpheme and it agrees by class with a preceding

²Common noun phrases in Lubukusu can be decomposed into “pre-prefix-prefix-nominal stem” and a pre-prefix and a prefix agree with a nominal stem, as exemplified in (i).

- (i) a. o-mu-aana
 PRE.PREFIX.1-PREFIX.1-child
 ‘the child’
- b. ba-ba-aana
 PRE.PREFIX.2-PREFIX.2-child
 ‘children’
- c. ku-mu-saala
 PRE.PREFIX.3-PREFIX.3-tree
 ‘the tree’ (a-c, Wasike 2007:18)

subject wh-phrases.^{3,4}

(18) *Subject wh-questions in Lubukusu*

- a. naanu **o**-w-a-tim-a?
 who(SG).1 CA.1-SA.1-PAST-run-FV
 ‘Who ran?’
- b. naanu **ba**-ba-a-tim-a?
 who(PL).2 CA.2-SA.2-PAST-run-FV
 ‘Who ran?’
- c. siina **si**-sy-a-tib-a?
 what(SG).7 CA.7-SA.7-PAST-run-FV
 ‘What got lost?’ (a-c, Wasike 2007:236)

(19) *Subject relative clause in Lubukusu*

- a. babaana **ba**-a-ch-a khu-sooko
 child(PL).2 SA.2-PAST-go-FV to-market
 ‘Children went to the market.’
- b. babaana **ba**-ba-a-ch-a khu-sooko ba-a-kobol-a
 child(PL).2 CA.2-SA.2-PAST-go-FV to-market SA.2-PAST-return-FV
 ‘Children who went to the market returned.’ (Wasike 2007:15)

³The additional agreement morpheme in subject wh-questions is identical to the pre-prefix morpheme for each noun class (See Wasike (2007:34) for the complete chart).

(i) Class	Pre prefix-Prefix-Nominal stem	CA-SA-Tens-Verbal stem
1.	o -muu-ndu ‘person’	o -w-a-kwa ‘who fell’
2.	ba -baa-ndu ‘people’	ba -ba-a-kwa ‘who fell’
3.	ku -mu-saala ‘tree’	ku -kw-a-kwa ‘which fell’
4.	ki -mi-saala ‘trees’	ki -ky-a-kwa ‘which fell’

⁴In the example (18-a), the subject agreement with a class1 noun appears as [w], whose underlying form is [a]. This is due to a phonological rule by which a sequence of more than two different vowels is avoided.

Such an agreement is obligatory; a sentence becomes unacceptable without the agreement.

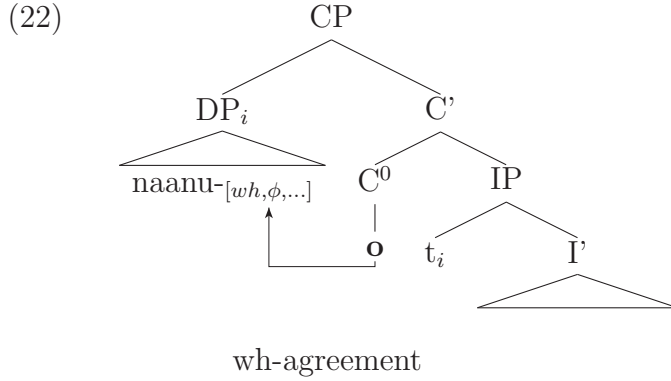
- (20) a. *naanu a-a-tim-a?
 who(SG).1 SA.1-PAST-run-FV
 ‘Who ran?’
- b. *naanu ba-a-tim-a?
 who(PL).2 SA.2-PAST-run-FV
 ‘Who ran?’
- c. *siina sy-a-tib-a?
 what(SG).7 SA.7-PAST-run-FV
 ‘What got lost?’ (a-c, Wasike 2007:236)

In the previous studies (Wasike 2007, Diercks 2010), the agreement is analyzed as wh-agreement with the assumption that a subject wh-phrase moves into the domain of CP and has an agreement relation with a certain head of the domain (i.e., Fin^0 assumed in Wasike 2007 and Diercks 2010) in Spec-Head configuration. As for the assumption that wh-agreement takes place in Spec-Head configuration (but not via Agree), take a look at the following example.

- (21) mumusiru (*si)-sy-a-kwa-mo siina?
 forest.18 CA.7-SA.7-PAST-fall-18 what.7
 ‘What fell In the forest?.’ (Diercks 2009:61)

As shown in the example (21), a subject can appear in a post-verbal position to trigger subject agreement. However, the post-verbal subject cannot trigger wh-agreement. The generalization made from the data so far is that wh-agreement takes place only when a wh-phrase that triggers the agreement precedes the agree-

ment morpheme in Lubukusu. This generalization is straightforwardly explained given that wh-agreement in Lubukusu is done in Spec-Head configuration. That is, as illustrated in (22), a subject wh-phrase moves to [Spec, CP] (or [Spec, FinP] according to Wasike 2007 and Diercks 2010) and has an agreement relation with C⁰ (or Fin⁰), which results in a morphological realization of wh-agreement.



Thus, given the fact that wh-agreement in Lubukusu is impossible with a post-verbal subject, I conclude that wh-agreement is achieved in Spec-Head configuration (or when a wh-phrase is in a position that c-commands the agreement Head under Baker's (2008) analysis) in Lubukusu.⁵

⁵Under the analysis of Baker (2008), which proposes the Direction of Agreement Parameter, another possibility is that C⁰ agrees with a DP only if the DP asymmetrically c-commands C⁰ in Lubukusu.

- (i) *The Direction of Agreement Parameter* (Baker 2008:215)
- a. F agrees with DP/NP only if DP/NP asymmetrically c-commands F, or
 - b. F agrees with DP/NP only if F asymmetrically c-commands DP/NP, or
 - c. F agrees with DP/NP only if F asymmetrically c-commands DP/NP or vice versa.

With the conclusion, the wh-agreement in subject extraction in Lubukusu suggests that a fronted subject wh-phrase retains its ϕ -features at the [Spec, CP]. As we will look at the detail in the next section, such a situation is possible because the pied-piping of formal features of the subject to the domain of CP satisfies the locality condition on pied-piping since there is no intervener for the pied-piping.

Let us, next, look at the case of object extraction in Lubukusu. Differently from subject extraction, object extraction cannot trigger wh-agreement.⁶

- (23) a. *[Kumusaala papa **kw**-a-a-byaal-a]
 tree.3 father.3 CA.3-SA.1-PAST-plant-FV
 kwa-a-cho-il-e
 SA.3-PAST-grow-PERF-FV
 ‘The tree which father planted has grown’
- b. *[Kumusaala **kw**-a-a-byaal-a papa]
 tree.3 CA.3-SA.1-PAST-plant-FV father.3
 kwa-a-cho-il-e
 SA.3-PAST-grow-PERF-FV
 ‘The tree which father planted has grown’ (a-b, Wasike 2007:49)

⁶The following contrast suggests that subject-verb inversion in relative clauses is disallowed in Lubukusu.

- (i) a. [Kumusaala ni-kwo papa a-a-byaal-a] kwa-a-cho-il-e
 tree.3 PRED-3 father.1 SA.1-PAST-plant-FV SA.3-PAST-grow-PERF-FV
 ‘The tree which father planted has grown.’
- b. *[Kumusaala ni-kwo a-a-byaal-a papa] kwa-a-cho-il-e
 tree.3 PRED-3 SA.1-PAST-plant-FV father.1 SA.3-PAST-grow-PERF-FV
 ‘The tree which father planted has grown.’ (a-b, Wasike 2007:49-50)

Thus, the sentence (23-b) is ungrammatical due to the presence of the subject-verb inversion, independently from a presence of wh-agreement.

Instead of wh-agreement, object extraction in Lubukusu involves “*ni* + agreement”, as exemplified in (24) and (25).^{7,8}

(24) *Object wh-question in Lubukusu*

- a. Naanu **ni-ye** Nafula a-a-sim-a?
 who.1 PRED-1 Nafula.1 SA.1-PRES-love-FV
 ‘who does Nafula love?’ (Wasike 2007:224)
- b. Siina **ni-syo** Wafula a-la-kul-a?
 what.7 PRED-7 Wafula.1 SA.1-FUT-buy-FV
 ‘Waht will Wafula buy?’ (Wasike 2007:12)

(25) *Object relative clause in Lubukusu*

- a. [Kumusaala **ni-kwo** papa a-a-byaal-a]
 tree.3 PRED-3 father.1 SA.1-PAST-plant-FV
 kwa-a-cho-il-e
 SA.3-PAST-grow-PERF-FV
 ‘The tree which father planted has grown.’ (Wasike 2007:49)
- b. [Chikhaafu **ni-cho** kuuka a-a-elesy-a baasooreri]
 cow.10 PRED-10 grandfather.1 SA.1-PAST-give-FV boy.2
 chi-li e-luuchi
 10-be at-river
 ‘The cows which grandfather gave the boys are at the river.’

⁷I assume, following Wasike (2007) and Diercks (2010), that *ni* base-generates under the Head of Predicational phrase (PredP). For some discussion about *ni*, see footnote 12.

⁸As well as object extraction, extraction of an element other than subjects involves “*ni* + agreement”.

- (i) [Muunju **ni-mwo** babaana ba-a-kon-a] mw-a-ba mu-nyifu
 house.18 PRED-18 children.2 SA.2-PAST-sleep-FV SA.18-PAST-be 18-cold
 ‘The house in which children slept was cold.’ (Wasike 2007:58)

Also Lubukusu allows wh-in-situ. In such a case, no “*ni* + agreement” appears.

- (ii) Wafula a-la-kul-a si(ina)?
 Wafula.1 SA.1-FUT-buy-FV what.7
 ‘Waht will Wafula buy?’ (Wasike 2007:12)

- c. [Baasooreri **ni-bo** kuuka a-a-elesy-a chikhaafu] ba-li
 boy.2 PRED-2 grandfather.1 SA.1-PAST-give-FV cow.10 2-be
 e-luuchi
 at-river
 ‘The boys who grandfather gave the cows are at the river.’
 (b-c, Wasike 2007:52)

As exemplified in (26), even with “*ni* + agreement”, wh-agreement cannot appear in object (or non-subject) extraction.

- (26) [Kumusaala **ni-kwo** papa (***kw**)-a-a-byaal-a]
 tree.3 PRED-3 father. CA.3-SA.1-PAST-plant-FV
 kwa-a-cho-il-e.
 SA.3-PAST-grow-PERF-FV
 ‘The tree which father planted has grown’ (Wasike 2007:49)

To summarize the data so far, there is a subject/object asymmetry in extraction in Lubukusu: When a subject is extracted, an additional agreement morpheme, which is called wh-agreement morpheme, appears before a subject agreement morpheme, as in (27-a). When an object is extracted, on the other hand, no wh-agreement morpheme appears, and instead of a wh-agreement morpheme, “*ni* + agreement” appears, as in (27-b).

- (27) a. Naanu **o-w-a-kw-a**?
 who.1 CA.1-SA.1-PAST-fall-FV
 ‘Who fell?’ (Wasike 2007:16)
- b. Siina **ni-syo** Wafula a-la-kul-a?
 What PRED-7 Wafula.1 SA.1-FUT-buy-FV
 ‘What will Wafula buy?’ (Wasike 2007:12)

In the next subsection, it is shown that the subject/object asymmetry can be explained under the analysis proposed in Chapter 2.

3.2.2 Analysis

As we have seen in the previous subsection, there is a subject/object asymmetry in wh-extraction in Lubukusu. One may wonder whether “*ni* + agreement” (or the agreement morpheme after *ni*) in object extraction is an allomorph of wh-agreement, like the tense morpheme seen in the subject/object asymmetry in English wh-questions. That is, English shows a subject/object asymmetry in wh-questions, as exemplified in (28), in which the past tense morpheme attaching to the verb *buy* in (28-a) and the one attaching to *do* in (28-c) are the same morpheme.

- (28) a. Who_{*i*} t_{*i*} **bought** the pen?
 b. *What_{*i*} John **bought** t_{*i*}?
 c. What_{*i*} **did** John **buy** t_{*i*}?

Thus, if wh-agreement in subject extraction and the agreement after *ni* in object extraction are the same morpheme in Lubukusu, the subject/object asymmetry may be explainable in a similar way as the subject/object asymmetry in English wh-questions.

Note, however, that the agreement after *ni* in object extraction is different from wh-agreement in subject extraction, which is evidenced by the fact that the two agreements are not in complementary distribution. As exemplified in (29) and

(30), “*ni* + agreement” is used for deriving a cleft sentence in Lubukusu. In cleft constructions, both wh-agreement and “*ni* + agreement” co-occur when a subject is clefted as in (29), whereas only one “*ni* + agreement” appears when an object is clefted as in (30).⁹

⁹In cleft sentences in Lubukusu, a sentence-initial copular can be optionally dropped excepting a cleft of non-wh objects.

- (i) a. babaana **ni-bo** ba-ba-a-funa luusaala.
children.2 PRED-2 CA.2-SA.2-PAST-break stick.11.
‘It is children who broke the stick.’
- b. naanu **ni-bo** ba-ba-a-funa luusaala.
who.2 PRED-2 CA.2-SA.2-PAST-break stick.11.
‘Who were they that broke the stick.’
- c. *luusaala **ni-lwo** Wamalwa a-a-funa.
stick.11 PRED-11 Wamalwa SA.1-PAST-break
‘It was a stick that Wamalwa broke.’
- d. siina **ni-syo** Wamalwa a-a-funa.
what.7 PRED-7 Wamalwa SA.1-PAST-break
‘What was it that Wamalwa broke.’ (a-d, Diercks 2010:194)

The sentence (i-c) without a sentential initial copular (i.e., *lw-a-ba*) is acceptable if it is interpreted as a relative clause. Wasike (2007) assumes that this may be because of parsing factors since the form of the sentence without the copular is identical to the one of an object relatives. Note, however, that in the case of subject clefts, “*ni* + agreement” can be optionally dropped without losing a cleft interpretation, although its form is identical to the one of a subject relative clause.

- (ii) a. Babaana (ni-bo) ba-ba-a-kw-a
children.2 PRED-2 CA.2-SA.2-PAST-fall-FV
‘It is children who fell.’ (Wasike 2007:16)
- b. Babaana ba-ba-a-kw-a
children.2 CA.2-SA.2-PAST-fall-FV
‘children who fell’ (Wasike 2007:29)

If the unacceptability of the cleft sentence (i-c) is due to parsing factors, it is unclear why the form of subject clefts can be identical with the one of subject relatives.

(29) *Subject cleft in Lubukusu*

- a. Ba-a-ba babaana **ni-bo** ba-ba-a-funa luusaala.
 SA.7-PAST-be children.2 PRED-2 CA.2-SA.2-PAST-break stick.11.
 ‘It is children who broke the stick.’
- b. Ba-a-ba naanu **ni-bo** ba-ba-a-funa luusaala.
 SA.7-PAST-be who.2 PRED-2 CA.2-SA.2-PAST-break stick.11.
 ‘Who were they that broke the stick.’ (a-b, Diercks 2010:194)

(30) *Object cleft in Lubukusu*

- a. Lw-a-ba luusaala **ni-lwo** Wamalwa a-a-funa.
 SA.11-PAST-be stick.11 PRED-11 Wamalwa SA.1-PAST-break
 ‘It was a stick that Wamalwa broke.’
- b. Si-a-ba siina **ni-syo** Wamalwa a-a-funa.
 SA.7-PAST-be what.7 PRED-7 Wamalwa SA.1-PAST-break
 ‘What was it that Wamalwa broke.’ (a-b, Diercks 2010:194)

If cleft sentences are mono-clausal in Lubukusu, the co-occurrence of wh-agreement and “*ni* + agreement” in subject clefts suggests that the two agreement morphemes are different elements generated in structurally different positions. If they were allomorphs that appear in the domain of CP, the two morphemes could never appear at the same time in the same clause.

On the other hand, if cleft sentences are bi-clausal in Lubukusu, the co-occurrence of wh-agreement and “*ni* + agreement” in subject clefts is not problematic. However, the absence of another “*ni* + agreement” in object cleft sentences is problematic for the analysis assuming that wh-agreement in subject wh-questions and “*ni* + agreement” in object wh-questions are allomorphs. That is, if the two agreements are the same element generated in the structurally same position, it is expected that two “*ni* + agreement”s appear in object questions, as illustrated in

(31), because both “*ni* + agreement” and wh-agreement appear in subject clefts.¹⁰

- (31) a. *Subject cleft*: [*ni*-AGR . . . [wh-AGR . . .]]
 b. *Object cleft*: [*ni*-AGR . . . [*ni*-AGR . . .]]

However, as exemplified in (30), that is contrary to fact; only one “*ni* + agreement” appears in object clefts. Therefore, if cleft sentences in Lubukusu are bi-clausal, the absence of another “*ni* + agreement” in object clefts tells us that the wh-agreement in subject questions/relatives and the agreement after *ni* in object questions/relatives are not complementarily distributed.

Thus, in either case, where cleft sentences are mono-clausal or bi-clausal in Lubukusu, the examples in (29) and (30) tell us that the two agreements under

¹⁰As exemplified in (i) “*ni* + agreement” can appear twice in a row in a certain construction.

- (i) Wekesa nii-ye ni-ye Nangila a-a-tekh-el-a kamakaanda
 Wekesa.1 PRED-1 PRED-1 Nangila.1 SA.1-PAST-cook-APPL-FV beans.6
 ‘Wekesa is the one who Nangila cooked beans for.’ (Wasike 2007:129)

Note, however, that according to Wasike (2007), the first “*ni* + agreement” in such a sentence, differently from the one in object extraction or cleft constructions, is a complex pronominal of sorts. As exemplified in (ii), “*ni* + agreement” is used as a pronominal, which means “the one”. Since Lubukusu allows copula drop, the examples in (ii) without a copula is ambiguous; it can be interpreted as a sentence or just a nominal.

- (ii) a. Ní-syo
 PRED-7
 ‘it’/‘it is’
 b. (Si-no) Nii-syo ní-syo ne-eny-a.
 7-this PRED-7 PRED-7 I-want-FV
 ‘It(/this) is the one that I want.’ (a-b Wasike 2007:88-89)

discussion are not complementarily distributed, which means that they are different elements.

Given this conclusion and the data (23) and (26), repeated in (32), a generalization on wh-agreement in Lubukusu is as stated in (33).

- (32) a. *[Kumusaala papa **kw**-a-a-byaal-a]
 tree.3 father.3 CA.3-SA.1-PAST-plant-FV
 kwa-a-cho-il-e
 SA.3-PAST-grow-PERF-FV
 ‘The tree which father planted has grown’
- b. *[Kumusaala **kw**-a-a-byaal-a papa]
 tree.3 CA.3-SA.1-PAST-plant-FV father.3
 kwa-a-cho-il-e
 SA.3-PAST-grow-PERF-FV
 ‘The tree which father planted has grown’
- c. [Kumusaala **ni-kwo** papa (***kw**)-a-a-byaal-a]
 tree.3 PRED-3 father. CA.3-SA.1-PAST-plant-FV
 kwa-a-cho-il-e.
 SA.3-PAST-grow-PERF-FV
 ‘The tree which father planted has grown’

- (33) *Generalization on wh-agreement in Lubukusu*

Wh-agreement appears in subject extraction, whereas it does not in object (non-subject) extraction.

The generalization in (33) can be explained with the analysis proposed in the previous chapter. In Chapter 2, I proposed that whether a moved element can carry its formal features to the landing site is determined by the two conditions, the locality condition on generalized pied-piping and anti-locality condition on movement.

(34) *Locality Condition on Generalized Pied-Piping (LCGPP)*

A formal feature cannot be pied-piped as a free rider if there is an intervening matching feature.

(35) *Anti-locality Condition on Movement (ALCM)*

Movement within a minimal domain is disallowed.

As discussed in Section 2.2, given the proposed analysis, an object (or non-subject) wh-phrase must move from a vP -edge position directly to the domain of CP. Then, due to the LCGPP, the moved object cannot pied-pipe its ϕ -features to the landing site because of the intervening matching features of the subject in [Spec, IP].

(36) [CP Obj_i-[wh, ϕ ...] C⁰ [IP Subj-[ϕ ...] I⁰ [_vP Obj_i-[wh, ϕ ...] ...]]

*pied-piping of ϕ

Given that wh-agreement is achieved in Spec-Head configuration in CP, the object wh-phrase cannot undergo ϕ -feature agreement with C⁰ because it lacks ϕ -features at the [Spec, CP].

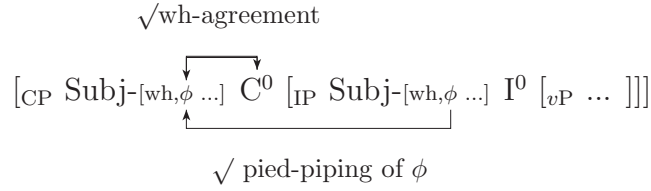
(37) *Extraction of non-subject*

$$\begin{array}{c}
 \text{*wh-agreement} \\
 \downarrow \\
 [\text{CP } \text{XP}_{i-[\text{wh}, \phi \dots]} \text{C}^0 [\text{IP } \underline{\text{Subj-}[\phi \dots]} \text{I}^0 [\text{vP } \text{XP}_{i-[\text{wh}, \phi \dots]} \dots]]] \\
 \uparrow \\
 \text{*pied-piping of } \phi
 \end{array}$$

In contrast to non-subject extraction, subject extraction can trigger wh-agreement because when a subject moves to the domain of CP, there is no intervener for the

subject's pied-piping its ϕ -features to the landing site. Therefore, it can retain its ϕ -features in [Spec, CP] and have an agreement relation with C^0 .

(38) *Extraction of subject*



Thus, the present analysis makes it possible to explain the presence of wh-agreement in subject-extraction and the absence of it in object-extraction.

As discussed so far, Lubukusu shows subject/object asymmetry in wh-agreement, as satated in the generalization (33). This asymmetry can be explained by the proposed analysis; under the analysis, object extraction can never show wh-agreement because an object cannot pied-pipe its ϕ -features to [Spec, CP] due to the intervening subject in [Spec, IP]. Now, a question arises as how a sentence with object-extraction, which involves “*ni* + agreement” instead of wh-agreement, is derived. I address this question in the next subsection, but before moving on to it, I discuss the analysis for the subject/object asymmetry proposed in Wasike (2007) pointing out its problems.

In order to capture the subject/object asymmetry in Lubukusu extraction, Wasike (2007), along the line of the articulated CP structure proposed by Rizzi (1997), proposes the following structure, in which wh-agreement in subject extraction appears under Fin^0 , *ni* and agreement after it in object extraction appears

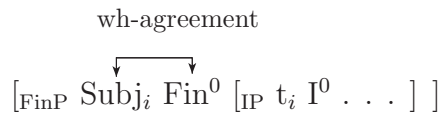
under Pred^0 and Pron^0 respectively.¹¹

$$(39) \quad \left[\text{ForceP} \text{ Force}^0 \left[\text{PredP} \text{ Pred}^0 \text{-} \textit{ni} \left[\text{PronP} \text{ Pron}^0 \text{-AGR} \left[\text{FocP} \text{ Foc}^0 \dots \left[\text{FinP} \text{ Fin}^0 \text{-} \right. \right. \right. \right. \right. \left. \left. \left. \text{wh.AGR} \dots \right] \right] \right] \right]$$

Then, Wasike (2007) claims that there are two different complementizers, one is used for subject extraction and the other is used for object extraction. In the case of subject extraction, the complementizer for subject extraction is introduced under Fin^0 and no maximal phrases higher than FinP exists, as illustrated in (40-a). In the case of object extraction, on the other hand, the complex complementizer for object (or non-subject) extraction is base-generated higher than FinP , \textit{ni} under Pred^0 and agreement after \textit{ni} under Pron^0 respectively, as illustrated in (40-b). Moreover, Wasike (2007), assuming that cleft sentences in Lubukusu are monoclausal, proposes that in subject cleft constructions, a clefted subject first moves to $[\text{Spec}, \text{FinP}]$ to have a wh-agreement relation with Fin^0 , which results in wh-agreement, and moves to $[\text{Spec}, \text{PronP}]$ to have another agreement relation with Pred^0 , which results in agreement after \textit{ni} (and then moves to a final landing site).

(40) Wasike's (2007) analysis

a. *Subject wh-question/relative with a truncated CP*



¹¹ PredP is a Predicational phrase, and PronP is a Pronoun phrase.

- b. *Object wh-question/relative/cleft with a full CP*

$$\begin{array}{c}
 ni \quad + \quad \text{Agreement} \\
 \downarrow \quad \downarrow \\
 [\text{ForceP} \text{ Obj}_i \text{ Force}^0 [\text{PredP } t''_i \text{ Pred}^0\text{-}ni [\text{PronP } t'_i \text{ Pron}^0 [\text{FocP} \dots [\text{FinP} [\text{IP} \\
 \text{Subj } I^0 [{}_{vP} \dots t_i]]]]]]]
 \end{array}$$

- c. *Subject cleft with a full CP*

$$\begin{array}{c}
 ni \quad + \quad \text{Agreement} \quad \quad \quad \text{wh-agreement} \\
 \downarrow \quad \downarrow \quad \quad \quad \downarrow \quad \downarrow \\
 [\text{PredP} \text{ Subj}_i \text{ Pred}^0\text{-}ni [\text{PronP } t'_i \text{ Pron}^0 [\text{FocP} \dots [\text{FinP } t_i \text{ Fin}^0 [\text{IP } t_i I^0 \dots]]]]]
 \end{array}$$

However, there are some problems on this analysis. Firstly, as Diercks (2010) points out, it is unclear why PredP and PronP appear in the left periphery even though neither of them are related to discourse functions. Secondly, the analysis is just a stipulation and it is totally unclear what is the “complementizer for subject extraction” and the “complementizer for non-subject extraction” and why the former cannot be used for object extraction and the latter cannot be used for subject extraction. Moreover, it is unclear why not a full CP but a truncated CP is used for subject extraction; even though non-subject moves to ForceP, why does subject extraction never involve such a movement to ForceP? Since Wasike’s (2007) analysis is just a stipulation, it does not truly explain the subject/object asymmetry in Lubukusu extraction.

3.2.3 Object extraction in Lubukusu

As discussed in the previous subsection, there is a subject/object asymmetry in wh-agreement in Lubukusu.

(41) *Generalization on wh-agreement in Lubukusu*

Wh-agreement appears in subject extraction, whereas it does not in object (non-subject) extraction.

We have seen that the presence of wh-agreement in subject extraction and the absence of it in object extraction can be explained under the proposed analysis. Now, a question arises as to how a sentence with object-extraction is derived. I address the question in this subsection.

First, remember that when an object is extracted, the morpheme *ni* and an additional agreement morpheme obligatorily appear.

- (42)
- a. Naanu *(**ni-ye**) Nafula a-a-sim-a?
who.1 PRED-1 Nafula.1 SA.1-PRES-love-FV
'who does Nafula love?'
 - b. Siina *(**ni-syo**) Wafula a-la-kul-a?
what.7 PRED-7 Wafula.1 SA.1-FUT-buy-FV
'Waht will Wafula buy?'
 - c. [Chikhaafu *(**ni-cho**) kuuka a-a-elesy-a baasooreri]
cow.10 PRED-10 grandfather.1 SA.1-PAST-give-FV boy.2
chi-li e-luuchi
10-be at-river
'The cows which grandfather gave the boys are at the river.'

- d. [Baasooreri *(**ni-bo**) kuuka a-a-elesy-a chikhaafu]
 boy.2 PRED-2 grandfather.1 SA.1-PAST-give-FV cow.10
 ba-li e-luuchi
 2-be at-river
 ‘The boys who grandfather gave the cows are at the river.’

As for the question about what is “*ni* + agreement”, I assume with Diercks (2010) that it is hosted by the Head, Pred^0 , which appears in the higher clause.¹²

$$(43) \quad \text{Agreement: “} ni + \text{agreement”}$$

$$\frac{[\dots [\text{PredP} \text{ XP } \text{Pred}^0 [\text{CP} \dots]]]}{\text{Agreement: “} ni + \text{agreement”}}$$

¹²Mutonyi (2000) assumes that *ni* is a copula in Lubukusu. As exemplified in Kiswahili example, *ni* is used as a copula in other Bantu languages.

- (i) Juma **ni** m-kulima.
 Juma.1 COP 1-farmer
 ‘Juma is a farmer’ (*Kiswahili*, Wasike 2010:87)

Contrary to Mutonyi’s claim, Wasike (2010) argues that *ni* is not a copula because it is not used in predicate contexts. As exemplified in (ii), *li*, in stead of *ni* is used as a copula.

- (ii) Wafula (a-li) omulimi.
 Wafula.1 1-COP farmer.1
 ‘Wafula is a farmer’ (*Lubukusu*, Wasike 2010:88)

As pointed out by Omer Preminger (p.c.), however, *ni* and *li* should be allomorphs of the same morpheme because it is known from their distributions that *li* appears when it is not in word-initial position and *ni* appears in word-initial position, and the same alternation can be found in other Bantu languages, like Bemba (Givón 2001:239).

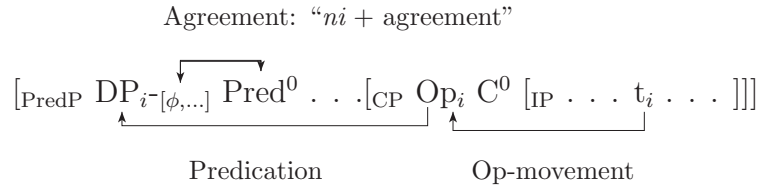
- (iii) /ni/ → [li] / word[X __

Thus, if this is on the right track, *ni* in “*ni* + agreement” in object extraction and cleft sentences is a copula.

As discussed at the end of the previous subsection, Wasike (2007) proposes that “*ni* + agreement” appears under Pred^0 and Pron^0 in the left periphery in an articulated CP structure. However, as Diercks (2010) points out, the proposal is problematic since neither of them are related to discourse functions. For this reason, I adopt Diercks’ (2010) assumption that PredP base-generates in the higher clause.

Moreover, following Diercks’ (2010) analysis for clefts in Lubukusu, I propose that object extraction as well as clefts, in which “*ni* + agreement” appears, involves a null-operator predication (Browning 1987, Heycock 1991, among others); a null operator moves to $[\text{Spec}, \text{CP}]$ (or $[\text{Spec}, \text{FinP}]$, according to Diercks (2010)) in the lower clause and a fronted DP that agrees with Pred^0 is base-generated in the higher clause.

(44) *Proposal: Object extraction in Lubukusu*



Under this analysis, a DP in $[\text{Spec}, \text{PredP}]$ has its ϕ -features at the position since it base-generates in the position. That is why the DP can undergo ϕ -feature (or class) agreement with Pred^0 and class agreement appears after *ni*.

The proposed analysis is supported by the fact that object extraction in Lubukusu is sensitive to island conditions but does not show Weak Crossover (WCO) effects at all. Let us, first, look at the case of object extraction out of islands. As

exemplified in (45), object extraction is sensitive to island conditions excepting Complex NP island.^{13,14}

¹³As well as object extraction, adjunct extraction is also sensitive to island conditions. (See Wasike (2007) pp.167-177 for the data and p.178 for the chart.)

¹⁴Contrasted to object extractions, island effects are weak (or absent) in (long-distance) subject extractions.

- (i) a. ?Naanu_i ni-ye [chi-lomo e_i mbo a-a-kul-a sitabu]
 who.1 PRED-1 10-report that SA.1-PAST-buy-FV book
 cha-a-chun-i-a Nafula kumwoyo?
 SA.10-PAST-hurt-CAUS-FV Nafula.1 heart
 ‘Who is it that the report that he bought the book hurt Nafula?’
(Subject (complex NP) island: Washike 2007:169)
- b. ?Naanu_i ni-ye Wafula e-e-ny-a khu-many-a [nibambo e_i
 who.1 PRED-1 Wafula.1 SA.1-PRES-want-FV INF-know-FV whether
 a-kha-kul-e sitabu]?
 SA.1-FUT-buy-FV book
 ‘Who is it that Wafula wants to know whether t s/he will buy the book?’
(wh-island: Wasike 2007:169)

The weakness/absence of island effects in the above examples can be explained given that the dependencies between the fronted wh-subject and its gap position is established via binding by base-generating the wh-phrase in the surface position and putting a *pro* which is bound by the wh-phrase, in its gap position. That is, since Lubukusu, as well as other Bantu languages, allows null subjects, the languages allows the following structure for subject wh-fronting.

- (ii) [Subject-wh₁ *ni*-AGR ... [*pro*₁ SA-...-V-... ...]]

This can be evidenced by the fact that in the examples in (i), no wh-agreement appears in the embedded clause in which the subject gap is present.

Note, also that subject extraction showed island effects when its gap is in the infinitival clause that lacks subject agreement.

- (iii) *Naanu ni-ye Nasike a-a-rekukh-a paata ye e khu-khuup-a Nanjala?
 who.1 PRED-1 Nasike.1 SA.1-PAST-leave-FV after of INF-beat-FV Nanjala.1

- (45) a. ?Siina ni-syo Nekesa a-a-nyol-a chilomo mbo
 What.7 PRED-7 Nekesa.1 SA.1-PAST-receive-FV report.10 that
 Wekesa a-a-kul-a?
 Wekesa SA.1-PAST-buy-FV
 ‘What did Nesika receive information that Wekesa bought?’
 (*Complex NP island*: Wasike 2007:169)
- b. *Siina ni-syo chilomo mbo Wafula a-a-kul-a
 what PRED-7 report.10 that Wafula.1 SA.1-PAST-buy-FV
 cha-a-chun-i-a Nafula kumwoyo?
 SA.10-PAST-hurt-CAUS-FV Nafula.1 heart
 Intended: What did the report that Wafula stole hurt Nafula?
 (*Subject (complex NP) island*: Wasike 2007:169)
- c. *Siina ni-syo Wafula e-ny-a khu-many-a nibambo
 what.7 PRED-7 Wafula.1 1prs-want-FV INF-know-FV whether
 Nafula a-kha-kul-e?
 Nafula.1 SA.1-FUT-buy-FV
 Intended: ‘What does Wafula want to know whether Nafula will buy?’
 (*Wh-island*: Wasike 2007:171)
- d. *Naanu ni-ye Nasike a-a-rekukh-a paata ya Wafula
 who.1 PRED-1 Nasike.1 SA.1-PAST-leave-FV after of Wafula.1
 khu-khuu-p-a?
 INF-INF-beat-FV
 Intended: ‘Who did Nasike leave after Wafula hit?’
 (*Adjunct-island*: Wasike 2007:173)

The unacceptability of the sentence (45) excepting (45-a) suggests that object extraction in Lubukusu involves a movement operation. This is compatible with my analysis that assumes a null-operator undergoes movement.¹⁵

Intended: ‘Who₁ is it that Nasike left after his₁ hitting Nanjala?’

(*Infinitival adjunct island*: Washike 2007:173)


These facts suggest that PRO cannot be used for the binding strategy and pro must be licensed by subject agreement in Lubukusu.

¹⁵As shown in the example (45-a), complex NP island effects are weak in Lubukusu. As well as Lubukusu, some languages, like Japanese, do not show complex NP island effects. In order to


Whereas the presence of island effects suggests that object extraction in Lubukusu involves movement, a certain phenomenon suggests that a fronted DP in such a construction does not undergo movement. The phenomenon is the absence of WCO effects in object extraction in Lubukusu. As exemplified in (47), a fronted wh-object can bind a bound variable, even in the case of long-distance fronting.

- (46) a. [Maayi wewe_{*1/2}] a-a-siim-a naanu₁?
 mother.1 his/her SA.1-PRES-love-FV who
 ‘Who₁ does his/her_{*1/2} mother love?’
- b. [Maayi wewe_{*1/2}] a-a-par-a a-li Wafula
 mother.1 his/her SA.1-PRES-think-FV 1-that Wafula.1
 a-a-siim-a naanu₁ ?
 SA.1-PRES-love-FV who
 ‘Who₁ does his/her_{*1/2} mother think that Wafula loves?’
- (a-b, Wasike 2007:150)

explain the absence of complex NP island effects, Nishigauchi (1986, 1990) proposes that in such a language, a wh-feature can percolate up to the DP that forms a complex NP, by which the entire DP is counted as wh-phrase.

- (i) [DP^{-wh} [NP [CP . . . XP^{-wh} . . .]]]

 percolation of wh-feature

Watanabe (1992b), modifying Nishigauchi’s (1986, 1990) approach, proposes that in the case where no complex NP island effects are observed, an operator originates in Specifier of a complex NP and moves from the position to [Spec, CP], by which the operator is exempted from moving out of an island.

- (ii) Complex NP

 [DP Op1 [NP [CP . . .]]]

- (47) a. Naanu₁ ni-ye [maayi wewe_{1/2}] a-a-siim-a?
 who PRED-1 mother.1 his/her SA.1-PRES-love-FV
 ‘Who₁ does his/her_{1/2} mother love?’
- b. Naanu₁ ni-ye [maayi wewe_{1/2}] a-a-par-a a-li
 who PRED-1 mother.1 his/her SA.1-PRES-think-FV 1-that
 Wafula a-a-siim-a?
 Wafula.1 SA.1-PRES-love-FV
 ‘Who₁ does his/her_{1/2} mother think that Wafula loves?’
 (a-b, Wasike 2007:145)

The availability of a bound variable reading in (47) contrasts with the cases of wh-questions in English and long-distance scrambling in Japanese, both of which are assumed to involve movement of a fronted DP.

- (48) a. *Who_{i1} does his₁ mother love t_i? (*English*)
- b. *Dare₁-ni_i [soitu₁-no hahaoya]-ga [Hanako-ga t_i deatta
 who-DAT the.person-GEN mmimiother-NOM Hanako-NOM met
 to] omotta no?
 COMP thought Q
 Intended: ‘Who₁ did his₁ mother think that Hanako met’ (*Japanese*)


The unavailability of bound variable reading in the sentences (48) is attributed to WCO, which is a phenomenon such that a bound variable reading is impossible when an operator moves across a non-c-commanding co-indexed variable. If object wh-fronting in Lubukusu involves movement of a fronted DP, it is mysterious why the sentences (47) are exempted from WCO. If, on the other hand, object wh-fronting involves null-operator predication and base-generation of a fronted DP as proposed here, the availability of the bound variable reading in (47) can be explained in the same way as so-called “Weakest Crossover” (Lasnik and Stowell 1991). Lasnik and

Stowell (1991) observe that bound variable reading is possible in appositive relative clauses, *Tough* Constructions, Parasitic gap constructions.

- (49) a. Gerald₁, who_{1*i*} his₁ mother loves t_{*i*}. (Lasnik and Stowell 1991:706)
 b. Who_{1*i*} t_{*i*} will be easy for us to get his₁ mother to talk to e_{*i*}?
 c. Who_{1*i*} did you stay with t_{*i*} [before his₁ wife had spoken to e_{*i*}]?
 (b-c, Lasnik and Stowell 1991:691)

Lasnik and Stowell (1991) attribute the absence of WCO effects to the fact that an operator that moves across a bound variable in these cases is not a “true” operator. That is, in these examples, the operator is semantically non-quantificational, but it function as causing a predication. Thus, it can be generalized that there are no WCO effects in the case of (null-)operator predication, as illustrated in (50).¹⁶

- (50) *Configuration of Weakest Crossover* (✓ bound variable reading)

$$[DP_{1i} \dots [Op_i \dots [[\dots \text{bound variable}_1 \dots] \dots t_i]]$$


As well as in the case of the above constructions in English, I propose that object extraction in Lubukusu involves null-operator predication; a null operator moves to the domain of the embedded CP and a DP/NP preceding “*ni* + agreement” base-generated in [Spec, PredP], as illustrated in (51).

¹⁶In addition to the three cases in (49), Lasnik and Stowell (1991) discuss Topicalization as an instance of Weakest Crossover. Note that Topicalization, under some analyses, is assumed to involve a movement of a topic phrase, rather than to involve null-operator movement. I discuss Weakest Crossover effects in Topicalization and the other three cases in detail in Section 4.6

(51) *Proposal: Object extraction in Lubukusu*

$$[\text{PredP DP}_1 \text{Pred}^0 \dots [\text{CP Op}_{1i} \text{C}^0 [\text{IP} \dots t_i \dots]]]$$

↑

Thus, given the proposed analysis, the availability of bound variable reading in object extraction in Lubukusu can be captured as an instance of Weakest Crossover. In Section 4.6, I will discuss how Weakest Crossover can be derived under the approach proposed in this thesis.

Note that Wasike (2007) observes that the sentences in (52) are unacceptable, whose ungrammaticality can be attributed to a violation of Condition C given that a fronted DP undergoes obligatory reconstruction.

- (52) a. *[Omwaana w-o omulimi₁] ni-ye pro₁ a-a-bon-a
 child.1 1-POSS farmer.1 PRED-1 pro SA.1-PAST-see-FV
 a-a-ba a-chekh-a
 1-PAST-be SA.1-laugh-fv
 ‘The farmer₁’s child that he₁ saw was laughing’ (Wasike 2007:113)
- b. *A-li [omwaana w-a Wekesa₁] ni-ye pro₁ a-a-bon-a
 1-be child.1 1-POSS Wekesa.1 PRED-1 pro SA.1-PAST-see-FV
 ‘It is Wekesa₁’s child that he₁ saw’ (Wasike 2007:148)


Given the data, Wasike (2007) concludes that object extraction and clefts in Lubukusu involve movement of a fronted DP, rather than null-operator predication.

However, there is a case where a sentence is ungrammatical apparently because of Condition C violation due to (obligatory) reconstruction of a DP even though the DP seems not to undergo movement. The first example is English relative clause. As exemplified in (53-b), an R-expression in a relativized DP cannot be coreferential with a pronoun in the relative clause.

- (53) a. The opinion of John that Bill thinks that Mary has is unfavorable.
 b. *The opinion of John₁ that he₁ thinks that Mary has is unfavorable.

(b, Schachter 1973:32)

The ungrammaticality of the sentences in (53-b) can be captured if we assume that the relativized DP/NP obligatorily moves to its gap position, which causes a condition C violation. However, given that a derivation of relative clause involves null-operator predication, by which the relativized DP/NP base-generates in the surface position as illustrated in (54), it is unclear why the movement of the relativized DP to its gap position must take place in such a situation.¹⁷

- (54) [[the opinion of John₁]_i [Op_i that [he₁ thinks that . . . t_i]]]
- 

Another example is apparent reconstruction to a position where a resumptive pronoun appears in Zurich German. As exemplified in (55-a), extraction out of an island (i.e., relative clause island in (55-a)) requires presence of a resumptive pronoun in Zurich German. The grammaticality of the sentence (55-a) with a resumptive pronoun can be explained given that the sentence-initial DP base-generates in the surface position, rather than undergo movement, and the dependency between it and its resumptive pronoun is established via binding. Now, let us look at the example in (55-b). As shown by the unacceptability of the example, the sentence-initial DP

¹⁷Under the analysis which assumes that relative clause is derived via movement of a relative “head” noun (Kayne (1994) and Bianchi (1999, 2000)), the ungrammaticality of the sentences in (53-b) can be captured as a reconstruction effect.

cannot be corefential with a pronoun in the relative clause.

(55) *Zurich German*

- a. de Autor₁, wo d Marie [jedes Buech, won *(er₁) schriibt], chaufft
 the author C the Mary every book C he writes buys
 ‘the author such that Mary buys every book he writes’
 (Salzmann 2009:29)
- b. *de Maa₁, won er₁ [d Frau, won en₁ geschter verlaa hät],
 the man C he the woman C him yesterday left has
 vertüüflet
 condemns
 lit.: ‘the man₁ who he₁ condemns the woman that left him₁’
 (Salzmann 2009:38)

The ungrammaticality of the sentence (55-b) can be captured if we assume that the relativized DP/NP undergo obligatory movement to a position where a resumptive pronoun appears. However, as shown by the example in (55-a), the DP/NP should be base-generated in the surface position binding the resumptive pronoun *en* in its gap position. Then, if the DP/NP is base-generated in the surface position, it is unclear why such an obligatory movement can/must take place.

Thus, if the ungrammaticality of the sentences in (53-b) and (55-b) is due to a violation of Condition C, and given that the two constructions involve a base-generation of a relativized DP/NP, then our conclusion is that it is possible for a base-generated DP to undergo lowering to its gap position. Or if such a lowering is impossible, the ungrammaticality of the sentences should not be attributed to a violation of Condition C.

Therefore, it cannot be concluded, from the examples in (52), that a relativized/clefted DP undergoes movement. Then, the proposed approach which assumes that object extraction and cleft in Lubukusu involve null-operator predication is sustainable.

Contrasted to my proposal that null-operator predication is involved both in object extraction and in clefts, Diercks (2010) proposes that “*ni* + agreement” in clefts is different from the one in object wh-questions/relatives and that while clefts involve a null-operator predication and base-generation of a clefted element, object wh-questions/relatives involve a movement of DP to [Spec, FinP], as illustrated in (56).

(56) *Diercks’ (2010) analysis*

a. *Object wh-questions/relative clause*

Agreement: “*ni* + agreement”

$$[\text{DP}_i \dots [_{\text{FinP}} \overbrace{\text{t}_i \text{ Fin}^0} \text{ [IP } \dots \text{ t}_i \text{]}]]$$

b. *Cleft*

Agreement: “*ni* + agreement”

$$[_{\text{PredP}} \overbrace{\text{DP}_i \text{ Pred}^0} [_{\text{CP}} \text{ Op}_i \dots \text{ t}_i]]$$

The observation that leads Diercks (2010) to propose the two different structures is that there is a difference in interpretation between object relatives and object clefts as shown in (57).

- (57) a. siitabu sy-ewe_{*1/2} ni-syo Tegani₁ a-a-nyola
 book.7 7-her PRED-7 Tegan.1 SA.1-PAST-find
 ‘her_{*1/2} book which Tegan₁ found’ (Diercks 2010:198)
- b. Sy-a-ba siitabu sy-ewe_{1/2} ni-syo Tegani₁ a-a-nyola.
 SA.7-PAST-be book.7 7-her PRED-7 Tegan.1 SA.1-PAST-find
 ‘It was her_{1/2} book which Tegan₁ found.’ (Diercks 2010:199)

As shown in (57-a), a possessive pronoun modifying the relativized noun cannot be coreferential with an R-expression in the relative clause, whereas as shown in (57-b), the one modifying the clefted noun can be coreferential with an R-expression in the subordinate clause. Based on this difference, Diercks (2010) proposes two different structures for clefts and object wh-questions/relatives as in (56). Note, however, that it is unclear how the difference in the availability of the co-referential reading can be explained under the two different structures proposed by Diercks (2010). Under his analysis, if the possessive pronoun is a bound variable that must be bound by its antecedent, the sentence (57-b) should not have the coreferential reading, as well as the sentence (57-a), since the bound pronoun is not bound. If, on the other hand, it is a pronoun subject to Condition B of the Binding Theory, the sentence (57-a) must satisfy Condition B.¹⁸ Since Condition C is also satisfied, the ungrammaticality cannot be explained with the Binding Theory under Diercks’ (2010) analysis. Thus, the difference in acceptability between (57-a) and (57-b)

¹⁸As shown by the following acceptable sentence, the binding domain of the possessive pronoun *ewe* is the (smallest) possessive DP in Lubukusu.

- (i) Paulo a-a-rem-a kumukhono kw-ewe.
 Paulo.1 SA.1-PAST-cut-FV hand.3 3-his
 ‘Paul cut his hand.’ (Safir and Sikuku 2011:23)

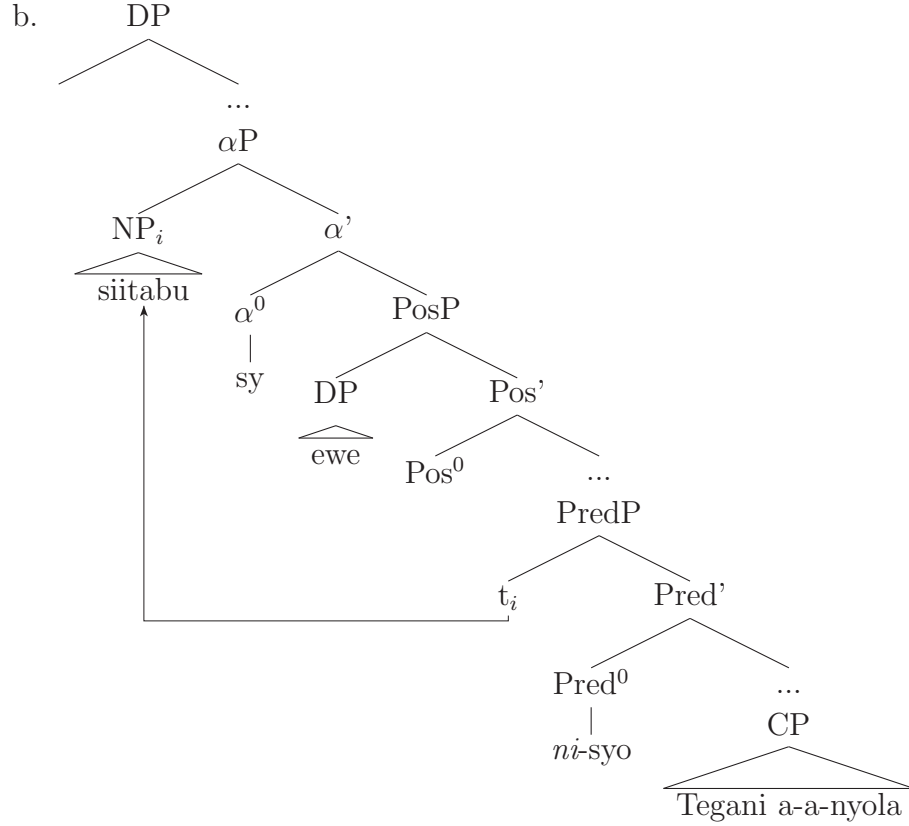
never supports Diercks’ (2010) analysis which assumes that clefts involve a null-operator predication while object wh-questions/relative clause do not. In addition, the absence of WCO effects in object wh-question as in (47) is problematic for Diercks’ (2010) analysis.

A possible analysis to explain the fact that the possessor pronoun cannot be co-referential with the R-expression in the relative clause in (57-a) is to assume that what is relativized is not the DP *siitabu sy-ewe* “her book” but just the NP *siitabu* “book” and the possessor *ewe* “her” is base-generated in a higher position by which the structure of the sentence (57-a) violates Condition C.¹⁹

- (58) a. siitabu sy-ewe_{*1/2} ni-syo Tegani₁ a-a-nyola
 book.7 7-her PRED-7 Tegan.1 SA.1-PAST-find
 ‘her_{*1/2} book which Tegan₁ found’

¹⁹The assumption that a relative clause merges with a nominal excluding its determiner/article is the standard for English restrictive relative clauses (Quine 1960, Stockwell et al. 1973, Partee 1975, and Chomsky 1977b, among many others). One argument in favor of this assumption is that an external determiner has scope over both the relative noun and the relative clause, which is straightforwardly explained given that the relative noun and the relative clause forms a syntactic and semantic unit excluding a determiner/article.

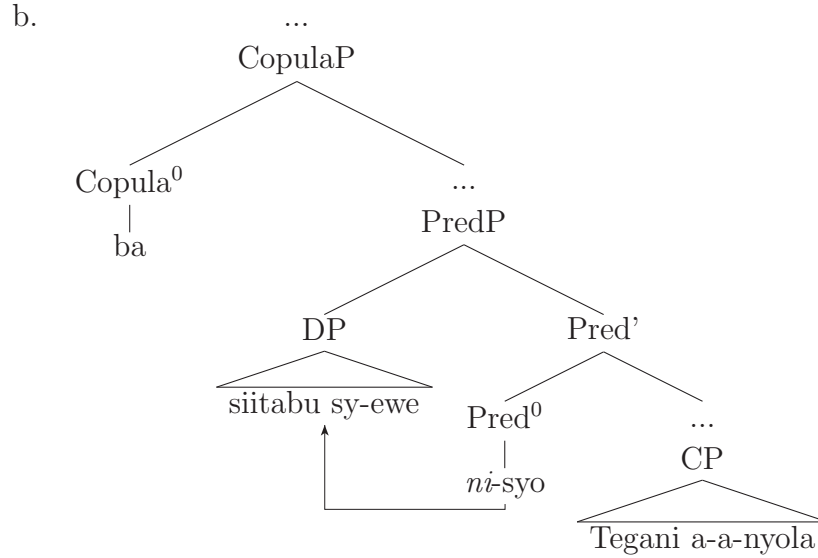
- (i) a. [DP every [NP woman who came to the party]]
 b. $\forall x$ [woman (x) \wedge (x) came to the party]



In the structure (59-b), what is base-generated in [Spec, PredP] by a predication is *siitabu* “book”, and the possessor pronoun *ewe* “her” appears in a higher position. Given the proposed structure, because the pronoun c-commands the coreferential R-expression ‘*Tegani*’, the sentence is ungrammatical with a violation of Condition C.

In the cleft sentence, on the other hand, what is base-generated in [Spec, Pred] is the entire DP, *siitabu sy-ewe* “her book”.

- (59) a. sy-a-ba siitabu sy-ewe_{1/2} ni-syo Tegani₁ a-a-nyola.
 SA.7-PAST-be book.7 7-her PRED-7 Tegan.1 SA.1-PAST-find
 ‘It was her_{1/2} book which Tegan₁ found.’



Because the pronoun *ewe* “her” does not c-command its coreferential R-expression *Tegani*, the sentence is grammatical with no violation of Condition C.

Thus, given that what is base-generated in [Spec, PredP] is different between in clefts and in relatives, the grammatical difference between (57-a) and (57-b) is not problematic for my proposal that both of object extraction and subject/object clefts involve null-operator predication that base-generates a DP/NP before “*ni* + agreement” in the surface position.²⁰

²⁰Another test to distinguish movement and base-generation is to use idiom chunks. Note, however, that the result of the test is not straightforward; a part of some idiom chunk can be relativized, while one of other idioms cannot (and none of any idioms can be clefted (see Wasike (2007:145-147) for the data)).

- (i) a. khu-khw-ar-a chiinjekho
inf-inf-break-FV laughter.10
to break laughter (= to laugh loudly)
- b. khuu-ly-a chitaabu
inf-eat-FV trouble.8
to eat trouble (= to suffer)
- c. khu-khuu-p-a sibi
inf-inf-hit-FV trouble.7

To summarize this section, I propose that object wh-questions/relative clauses, as well as clefts, in which “*ni* + agreement” appears, are derived via null operator predication, by which a relativized/clefted DP/NP is base-generated higher than “*ni* + agreement”. Since the DP/NP is base-generated in the position, it has ϕ -features at the position. That is why, the DP/NP can agree with the head that hosts “*ni* + agreement”.

- (60) Agreement: “*ni* + agreement”
- $$\begin{array}{c}
 \begin{array}{c} \text{[PredP DP}_1 \text{ Pred}^0 \text{ [CP Op}_{1i} \text{ C}^0 \text{ [IP . . . t}_i \text{ . . .]}] \end{array} \\
 \begin{array}{cc} \xleftarrow{\quad} & \xleftarrow{\quad} \\ \text{Predication} & \text{Null-operator movement} \end{array}
 \end{array}$$
-
- to hit trouble (= to suffer)
- d. khu-khuu-p-a epeyi
inf-inf-hit-FV price.9
to hit the price (= to bargain) (a-d, Wasike 2007:145-147)
- (ii) a. Chitaabu ni-cho Wafula a-a-ly-a cha-ba chi-ngali po.
trouble.10 PRED-10 Wafula.1 SA.1-PAST-eat-FV 10-be 10-many very
‘The troubles that Wafula faced were immense.’
- b. Chinjekho ni-cho Nanjekho a-a-ar-a cha-a-sindu-sy-a
laughter.10 PRED-10 Nanjekho.1 SA.1-PAST-break-FV SA.10-PAST-frighten-CAUS-FV
babaana.
children.2
‘The laughter that Nanjekho broke frightened the children.’
- c. *Siibi ni-syo babaana ba-a-p-a sy-a-mb-uk-y-a.
trouble.7 PRED-7 children.2 SA.2-PAST-hit-FV SA.7-PAST-me-surprise-CAUS-FV
‘The trouble that children hit surprised me.’
- d. *Epeyi ni-yo maayi a-a-p-a y-a-b-a e-ngali.
price.9 PRED-9 mother.1 SA.1-PAST-hit-FV SA.9-PAST-be-FV 9-much
‘The price that mother hit was high.’ (a-d, Wasike 2007:151)

3.2.4 Summary: Wh-agreement in Lubukusu

As we have seen in this section, Lubukusu shows subject/object asymmetry in wh-fronting, relativization, and clefting. While so-called wh-agreement appears in subject ones, it never appears in object ones. Instead of wh-agreement, object wh-fronting/relatives have “*ni* + agreement”, which is used in subject/object cleft constructions. The data are summarized in the chart (65).

(61) *Subject wh-fronting/relative clause*

- a. Naanu **o**-w-a-kw-a?
 who.1 CA.1-SA.1-PAST-fall-FV
 ‘Who fell?’ (Wasike 2007:16)
- b. Babaana **ba**-ba-a-ch-a khu-sooko ba-a-kobol-a
 child(PL).2 CA.2-SA.2-PAST-go-FV to-market SA.2-PAST-return-FV
 ‘Children who went to the market returned.’ (Wasike 2007:15)

(62) *Object wh-fronting/relative clause*

- a. Siina **ni-syo** Wafula a-la-kul-a?
 What PRED-7 Wafula.1 SA.1-FUT-buy-FV
 ‘What will Wafula buy?’ (Wasike 2007:12)
- b. [Kumusaala **ni-kwo** papa a-a-byaal-a]
 tree.3 PRED-3 father.1 SA.1-PAST-plant-FV
 kwa-a-cho-il-e
 SA.3-PAST-grow-PERF-FV
 ‘The tree which father planted has grown.’ (Wasike 2007:49)

(63) *Subject cleft in Lubukusu*

- a. (Ba-a-ba) Babaana **ni-bo ba**-ba-a-funa luusaala.
 SA.7-PAST-be children.2 PRED-2 CA.2-SA.2-PAST-break stick.11.
 ‘It is children who broke the stick.’

- b. (Ba-a-ba) naanu **ni-bo** ba-ba-a-funa luusaala.
 SA.7-PAST-be who.2 PRED-2 CA.2-SA.2-PAST-break stick.11.
 ‘Who were they that broke the stick.’ (a-b, Diercks 2010:194)

(64) *Object cleft in Lubukusu*

- a. *(Lw-a-ba) luusaala **ni-lwo** Wamalwa a-a-funa.
 SA.11-PAST-be stick.11 PRED-11 Wamalwa SA.1-PAST-break
 ‘It was a stick that Wamalwa broke.’
- b. (Si-a-ba) siina **ni-syo** Wamalwa a-a-funa.
 SA.7-PAST-be what.7 PRED-7 Wamalwa SA.1-PAST-break
 ‘What was it that Wamalwa broke.’ (a-b, Diercks 2010: 194)

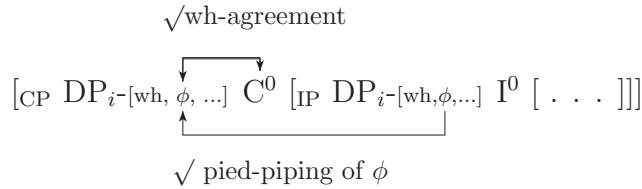
(65)

	<i>ni</i> + agreement	wh-agreement
Subject wh-fronting/relative		✓
Subject cleft	✓	✓
Object wh-fronting/relative	✓	
Object cleft	✓	

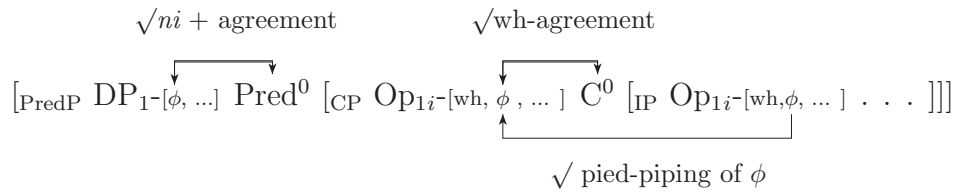
To explain the agreement patterns, I proposed that (i) the absence of wh-agreement in object extraction is due to the locality condition on generalized pied-piping, and (ii) a construction with “*ni* + agreement” involves null-operator predication, by which a DP/NP that precedes “*ni* + agreement” is base-generated higher than the head that hosts “*ni* + agreement” (i.e., Pred⁰, according to Diercks (2010)). Given the proposal, it is possible to capture the different agreement patterns in Lubuksusu extraction. That is, with the locality condition on generalized pied-piping, which

states that generalized pied-piping is subject to relativized minimality, objects cannot pied-pipe their ϕ -features to the domain of CP because of intervening ϕ -features of a subject. That is why no wh-agreement appears in object extraction. In subject extraction, on the other hand, subjects can carry their ϕ -features to the domain of CP since there is no intervener and can have a wh-agreement with a Head of the CP. Moreover, given the proposed analysis, a fronted DP/NP in object extraction and in clefts base-generates in [Spec, PredP] via null-operator predication, which makes it possible that the DP/NP agrees with Pred⁰, which hosts “*ni* + agreement”. That is why a fronted object shows agreement with a morpheme after *ni*. The proposed derivations are illustrated in (66).

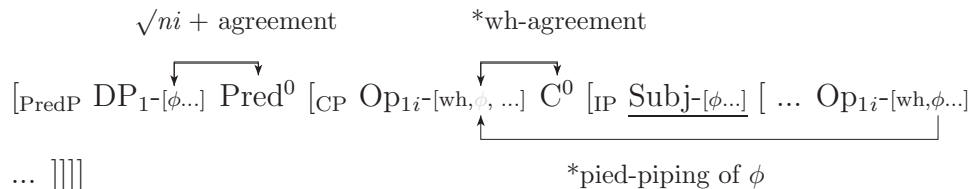
(66) a. *Subject wh-fronting/relative clause*



b. *Subject cleft*



c. *Object wh-fronting/relative clause/cleft*



Note that under my analysis, sentences with object extraction are derived even though wh-agreement does not take place. If C^0 would have an uninterpretable ϕ -features that must be checked in the course of the derivation, the sentences would be ungrammatical. Thus, I propose that wh-agreement in Lubukusu (and other Bantu languages) is not triggered by an uninterpretable (or must-be-checked) feature on C^0 , but it is a by-product of checking of an EPP feature on C^0 . Remember that an in-situ wh-phrase cannot trigger wh-agreement as exemplified in (67), which suggests that wh-agreement takes place only when a wh-phrase undergoes movement that is triggered by checking of an EPP feature under my analysis.

- (67) mumusiru (*si)-sy-a-kwa-mo siina?
 forest.18 CA.7-SA.7-PAST-fall-18 what.7
 ‘What fell In the forest?.’ (Diercks 2009:61)

In the case of the sentence (67), C^0 does not have an EPP-feature, so only wh-feature checking takes place under the configuration where C^0 c-commands the wh-phrase.

- (68) a. $[_{CP} C^0-[_{wh}] [\dots XP-[_{wh}, \phi] \dots]]$
 b. $\begin{array}{c} \text{wh-feature checking} \\ \downarrow \\ [_{CP} C^0-[_{wh}] [\dots XP-[_{wh}, \phi] \dots]] \end{array}$

Since no EPP-feature checking is involved, no wh-agreement takes place.

In the case where wh-agreement takes place as exemplified in (69), C^0 has an EPP feature, so a wh-phrase undergoes movement to check the EPP-feature. Then, wh-agreement occurs as a consequence of the checking, as illustrated in (70)

- (69) siina **si**-sy-a-tib-a?
 what(SG).7 CA.7-SA.7-PAST-run-FV
 ‘What got lost?’ (Wasike 2007:236)

3.2.5 Variations of Lubukusu-type languages

In the previous sections, we have seen that Lubukusu shows subject/object asymmetry in wh-agreement, and the asymmetry can be explained under the proposed analysis. In this subsection, we will look at other languages, Dzamba and Shingazidja, which show the same asymmetry in wh-questions.

First, let us look at wh-questions in Dzamba. Dzamba is a Bantu language

-
- (ii) a. Simiyu a-a-som-a siitabu.
 Simiyu.1 SA.1-PAST-read-FV book.7
 ‘Simiyu read that book.’
- b. Siitabu, Simiyu a-a-som-a
 book.7 Simiyu.1 SA.1-PAST-read-FV
 ‘The book, Simiyu read.’ (a-b, Wasike 2007:276)

If this is on the right track, it is predicted that some languages that show subject/object asymmetry in wh-agreement allow object wh-movement without wh-agreement if the surface form of wh-questions can be distinguished from the one of topicalization. The prediction is borne out in Dzamba: As we will see in the next subsection, wh-questions in Dzamba show subject/object asymmetry as well as in Lubukusu; subject wh-movement causes wh-agreement, while object one does not. Differently from Lubukusu, object wh-questions in Dzamba are derived by wh-movement of objects, which does not cause wh-agreement. As shown in (iii), wh-questions and Topicalization have different surface forms in Dzamba. The former involves right-dislocation, while the latter involves left-dislocation.

- (iii) a. oNKɔkɔ a-eza-áki o-ndaola yei lɔme **NDE/BINDE**?
 the.grandfather.1 SA.1-give-IMPf the-grandson his today what
 ‘What did the grandfather give to his grandson today?’ (Bokamba 1976:155)
- b. **Imukanda** oPoso a-mu-tom-aki.
 the.letter.5 Poso.1 SA.1-OM.5-send-IMPf
 ‘The letter Poso sent.’ (Givón 1979:189)

spoken in the Democratic Republic of the Congo. The basic word order of a declarative sentence in the language is SVO (O), and a pre-verbal agreement morpheme agrees with the preceding subject in class, as exemplified in (71).

(71) *Dzamba declarative sentence*

- a. oPɔsɔ a-tom-el-áki oMusa mw-enzi lɔme.
Pɔsɔ SA.1-send-APPL-IMPF Musa a.message today
‘Pɔsɔ sent a message to/for Musa today.’ (Bokamba 1976:157)
- b. oNKɔkɔ a-eza-áki o-ndaola yei mbano lɔme.
the.grandfather.1 SA.1-give-IMPF the-grandson his bow today
‘The grandfather gave a bow to his grandson today.’
(Bokamba 1976:155)

In wh-questions in Dzamba, a wh-word appears at the end of the sentence, as shown in (72).^{22,23}

(72) *Dzamba wh-questions*

- a. ó-tom-el-áki oMusa mw-enzi lɔme **NZANYI?**
CA.1-sent-APPL-IMPF Musa a.message today who

²²Another way to express subject wh-questions, discussed in Bokamba (1976), is using relative clauses as exemplified in (i). In this case, wh-phrase can appear in the front position of the clause.

- (i) a. oMoto ó-tom-el-áki oMusa mw-enzi lɔme NZANYI?
the.person CA.1-sent-APPL-IMPF Musa a.message today who
‘Who was the person that sent a message to/for Musa today?’
- b. oMoto NZANYI ó-tom-el-áki oMusa mw-enzi lɔme?
the.person who CA.1-sent-APPL-IMPF Musa a.message today
‘Who was the person that sent a message to/for Musa today?’
(a-b, Bokamba 1976:163)

²³Object relative clauses in Dzamba show a different agreement pattern. I will discuss it in Section 3.3.3.

‘Who sent a message to/for Musa today?’ (Bokamba 1976:163)

- b. oNKɔkɔ a-eza-áki o-ndaola yei loome
the.grandfather.1 SA.1-give-IMPF the-grandson his today
NDE/BINDE?
what
‘What did the grandfather give to his grandson today?’
(Bokamba 1976:155)

In contrast to declarative sentences, a subject or an object appears sentence-finally if it is a wh-phrase in wh-questions. Notice that the preverbal agreement form is different between the subject wh-question and the object wh-question. In the subject wh-question, it appears as *ó*, which is different from the canonical subject agreement morpheme for class1 noun *a*.²⁴ This pre-verbal agreement morpheme can be analyzed as a complementizer agreement which agrees with a subject wh-phrase in its rightward Specifier. In the object wh-question, on the other hand, no such an agreement appears. Instead, the canonical subject agreement morpheme *a* appears. Thus, as well as Lubukusu extraction, the subject/object asymmetry such that only subject extraction shows wh-agreement is observed in Dzamba wh-questions.

Shingazidja also shows the same subject/object asymmetry. Shingazidja is a

²⁴Note that no subject agreement appears in the subject question (72-a) and the subject relatives in (i) in footnote 22. Bokamba (1976) observes that when a dislocated subject is [-human], subject agreement must appear in Dzamba.

- (i) izikenge í-(zĩ)-bung-í o kalasi zi-ba-áki za-nga.
the.slate CA.5-SA.5-loose-PAST at school SA.5-be-IMPF of-me
‘The slate which is lost at school was mine.’ (Bokamba 1976:90)

The absence of subject agreement when wh-agreement appears is also seen in other Bantu languages. I briefly discuss it in footnote 29.

Bantu language spoken in the island, Grande Comore. The canonical word order of a declarative sentence in Shingazidja is SVO, as exemplified in (73).

- (73) mlimadjí ha-rem-é paha.
farmer.1 SA.1-beat-FV cat.5
'A farmer beat a cat' (Patin 2011:4)

As in Dzamba, a *wh*-word appears at the end of the sentence in *wh*-questions in Shingazidja.^{25,26}

- (74) *Shingazidja* subject wh-question
- a. ya-won-á yemleví **nqó**?
CA.1-see-FV drunkard.1 who.1
'Who has seen the drunkard?'
- b. fa-rem-á **hinqí**?
CA.7-hit-FV what.7
'What has hit?' (a-b, Patin 2011:17)

- (75) *Shingazidja object wh-questions*

²⁵Patin (2011) reports that some of his informants put subject wh-words regularly at the beginning of the sentence.

- (i) a. **nɔŋ-βi** yá-won-a emleví?
who.1-FOC CA.1-see-FV drunkard
'Who has seen the drunkard?'
- b. **hɪndí** fá-m-rem-a?
what.7 CA.7-OM.1-hit-FV
'What has hit him?' (Patin 2011:17)

²⁶Since the basic word order in Shingazidja is SVO, it is unknown from the data (75), whether the non-subject *wh*-phrase undergoes a rightward movement or not. Thus, we need better examples.

- a. (y)emleví ha-won-ó **ndó**.
drunkard.1 SA.1-see-FV who.1
‘Who did the drunkard see?’
- b. ha-rem-é **hindí**?
SA.1-hit-FV what.7
‘What did he hit?’
- c. (y)emleví ha-w-ú **ndahú**.
drunkard.1 SA.1-fall-FV where.17
‘Where did the drunkard fall?’ (a-c, Patin 2011:17)

Also, comparing subject wh-questions and non-subject questions, we know that the pre-verbal agreement morpheme differs between subject wh-questions and object wh-questions. While the form of the pre-verbal agreement in subject wh-questions is different from the one in declaratives, which can be analyzed as wh-agreement, it is same as the canonical subject agreement in non-subject wh-questions. Thus, Shingazidja also shows the subject/object asymmetry in wh-agreement.

To summarize the data in Dzamba and Shingazidja, subject wh-questions show wh-agreement, whereas object (or non-subject) ones do not in the languages.

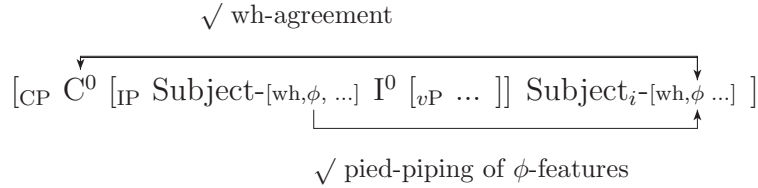
(76) *Wh-agreement in wh-question in Dzamba and Shingazidja*

- a. Subject wh-questions: ✓
- b. Non-subject wh-questions: No

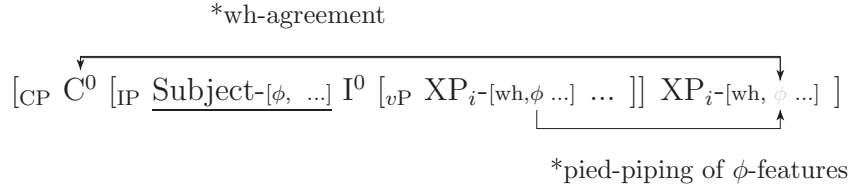
As in Lubukusu, this subject/non-subject asymmetry can be explained under the present analysis. Given the analysis, in subject wh-questions, a subject can pied-pipe its ϕ -features to rightward [Spec, CP], so it can undergo wh-agreement with C^0 . In non-subject wh-questions, on the other hand, XP that undergoes wh-

movement to [Spec, CP] cannot pied-pipe its ϕ -features to the landing site because ϕ -features of the subject are an intervener for the pied-piping.

(77) a. *Subject wh-question*



b. *Non-subject wh-question*



Thus, the presence of wh-agreement in subject questions and the absence of it in non-subject wh-questions in wh-questions in Dzamba and Shingazidla can be derived by the theory of generalized pied-piping proposed in this thesis.

3.3 Kilega

In the previous section, we looked at the Bantu language, Lubukusu, in which so-called wh-agreement appears only in subject extraction. In this section, we will look at another type of Bantu language, in which wh-agreement takes place even in object extraction as well as in subject extraction. As argued in Section 3.1, given the analysis proposed in Chapter 2, it follows that a moved object can pied-pipe its ϕ -features to the domain of CP only if a subject is not an intervener. Now,

provided that wh-agreement in the Bantu languages is established via Spec-Head configuration, the presence of wh-agreement in object extractions suggests that a moved object retains its ϕ -features in the domain of CP. Then, under the current analysis, it is predicted that subjects are not in an intervening position when objects moves to the domain of CP in these languages. In this section, I will show that the prediction is borne out in Kilega and Dzamba (and other Bantu languages): in these languages, a subject is in-situ (i.e., remains in [Spec, v P]) when an object undergoes movement to the domain of CP.

3.3.1 Agreement pattern in Kilega

Kilega is a Bantu language spoken in the Democratic Republic of the Congo. As well as Lubukusu and other Bantu languages, Kilega has subject agreement: a form of the agreement marker prefixed on the verb varies depending on the class of the subject of the clause, as exemplified in (78).

- (78) a. [**Mwána mu-sóga**] á-ku-kít-ag-a búbo.
 child.1 1-nice SA.1-PRG-do-HAB-FV that.14
 ‘A nice child always/usually does that’
- b. [**Bána ba-sóga**] bá-ku-kít-ag-a búbo.
 child.2 2-nice SA.2-PRG-do-HAB-FV that.14
 ‘Nice children always/usually do that’
- c. [**Kasukú ka-sóga**] ka-ku-kít-ag-a búbo.
 resin.torch.12 12-nice SA.12-PRG-do-HAB-FV that.14
 ‘A nice resin torch always/usually does that’
- d. [**Tusukú tu-sóga**] tu-ku-kít-ag-a búbo.
 resin.torch.13 13-nice SA.13-PRG-do-HAB-FV that.14
 ‘Nice resin torches always/usually do that’ (a-d, Kinyalolo 1991:15)

Kilega also has wh-agreement. As exemplified in (79), an agreement morpheme that agrees with a fronted wh-phrase is prefixed to the verb.^{27,28}

²⁷Relative clauses in Kilega are derived in the same way as wh-fronting: a relativized DP/NP precedes a verbal chunk with wh-agreement as exemplified in (i).

- (i) Bítondo bí-ku-ténd-a úzo mwána ta-bí-lí bi-sóga.
word.8 CA.8-PRG-say-FV that.1 child.1 NEG-SA.8-be 8-good
‘The words that that child is saying are not good.’ (Carstens 2005:233)

²⁸As shown in the chart (i), morphological forms of subject agreement and ones of wh-agreement in Kilega are identical to each other excepting class1 (See Kinyalolo 1991, pp.6-7 for the complete chart).

(i)	Class	Subject Agreement	Wh-agreement
	1.	á-	ú-
	2.	bá-	bá-
	3.	ú-	ú-
	4.	zí-	zí-
	5.	lí-	lí-

Moreover, as we will look at in detail in the next subsection, a subject agreement morpheme disappears in wh-fronting. Thus, one may wonder how it is possible to know that a pre-verbal agreement in wh-fronting is wh-agreement, but not subject agreement, when a wh-phrase that is not class1 is fronted. One way to know whether the agreement morpheme is subject agreement or wh-agreement is to look at word order between the agreement morpheme and negation. As exemplified in (ii), subject agreement follows the negation morpheme *ta*, whereas wh-agreement precedes it.

- (ii) a. **Mutu** t-á-ku-sol-ág-á maku wéneéne.
person.1 NEG-SA.1-PRG-drink-HAB-FV beer.6 alone
‘A person does not usually drink beer alone.’ (Kinyalolo 1991:28)

(79) *wh-fronting in Kilega*

- a. **Nází** **ú**-ku-kít-ag-a búbo?
 who.1 CA.1-PRG-do-HAB-FV that.14
 ‘Who usually does that?’ (Kinyalolo 1991:20)
- b. **Bikí** **bi**-á-kás-íl-é bábo bíkulu mwámí mu-mwílo?
 what.8 CA.8-PAST-give-PERF-FV that.2 woman.2 chief.1 18-village.3
 ‘What did those women give the chief in the village?’
 (Kinyalolo 1991:21 (modified), Den Dikken 2001:20)
- c. **Kúní** **kú**-ta-ku-yan-ág-á bána mu-kindí?
 where.17 CA.17-NEG-PRG-play-HAB-FV children.2 18-night
 ‘Where don’t children usually play at night?’ (Carstens 2005:231)

Note that, contrasted to Lubukusu, there is no subject/object (or subject/non-subject) asymmetry in wh-agreement in Kilega. That is, as shown in (79-b) and (79-c), object wh-fronting or adjunct wh-fronting also triggers wh-agreement.²⁹

-
- b. **Nází** **ú**-tá-ku-ténd-ág-á na Lusángé?
 who.1 CA.1-NEG-PRG-speak-HAB-FV with Lusange
 ‘Who does not usually speak with?’ (Kinyalolo 1991:27)

²⁹As exemplified in (79), no subject agreement appears in wh-fronting. One possible approach to explain this property is to assume that in these languages, I-to-C movement is obligatory and the complex Head, C⁰-I⁰ amalgamate, agrees with an XP in [Spec, CP], rather than each head C⁰ and I⁰ undergoes agreement separately (Watanabe 1996).

- (i) $\begin{array}{c} \overleftarrow{} \\ \text{[CP XP C}^0\text{-I}^0\text{ }_i \text{ [IP } t_i \text{ [. . .]}] \end{array}$

Another possibility is that the absence of subject agreement in wh-fronting is due to the morphologically economy requirement (ii), which is originally proposed by Kinyalolo (1991) and revised by Carstens (2005).

- (ii) In a word (phonologically defined), AGR on a lower head is silent iff its features are predictable from AGR on a higher head. (Carstens 2005:255)

A question that arises about the agreement system in Kilega is how subject agreement and wh-agreement are established in Kilega. The following data in (80) and (82) shows that both subject-agreement and wh-agreement appears only when an XP that causes agreement is fronted, which suggests that the two agreement are achieved in Spec-Head configuration in Kilega. Let us, first, look at the case of subject agreement.

(80) *Subject agreement*

- a. Mutu t-á-ku-sol-ág-á maku wéneéne.
 person.1 NEG-SA.1-PRG-drink-HAB-FV beer.6 alone
 ‘A person does not usually drink beer alone.’
- b. **Maku** ta-má-ku-sol-ág-á mutu wéneéne.
 beer.6 NEG-SA.6-PRG-drink-HAB-FV person.1 alone
 ‘No one usually drinks beer alone.’ (a-b, Kinyalolo 1991: 28-29)
- c. **Ku-Lúgushwá** kú-kili **ku**-á-twag-a nzogu
 17-Lugushwa SA.17-be.still SA.17-ASP-stampede-FV elephant.10
 maswá.
 farm.6
 ‘At Lugushwa, elephants are still stampeding (over) the farm’.
 (Carstens 2005:238)

In the example (80-a), which is a normal SVO sentence, the logical subject *mutu* “person” precedes the verb and agrees with the verb. On the other hand, in (80-b) and (80-c), in which transitive inversion and locative inversion takes place respectively, what agrees with the verb is not the post verbal logical subject but the preverbal object or locative phrase. As shown in the following examples, sentences

Either possibility is compatible with my analysis, so I leave it as an open question which one is correct.

are unacceptable if a verb agrees with a post-verbal logical subject.

- (81) a. **Ga-mutábi gá-li** tuzoni tu-íngí
 16-branch.3 SA.16-be bird.13 13-many
 ‘There are many birds on the branch’
- b. *Ga-mutábi **tú-li** **tuzoni tu-íngí**
 16-branch.3 SA.13-be bird.13 13-many
 ‘There are many birds on the branch’ (a-b, Kinyalolo 1991:18)

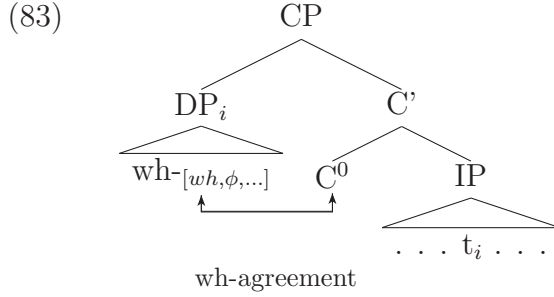
Thus the generalization is that a verb undergoes subject-agreement only with an XP that precedes the verb. The generalization can be explained straightforwardly given that subject-agreement in Kilega is established in Spec-Head configuration.

Let us, next, look at the case of wh-agreement.

- (82) *wh-agreement*
- a. Bábo bíkulu b-á-kás-íl-é mwámí **bikí** mu-mwílo?
 that.2 woman.2 SA.2-PAST-give-PERF-FV chief.1 what.8 18-village.3
 ‘What did those women give the chief in the village?’
- b. **Bikí** bi-á-kás-íl-é bábo bíkulu mwámí mu-mwílo?
 what.8 CA.8-PAST-give-PERF-FV that.2 woman.2 chief.1 18-village.3
 ‘What did those women give the chief in the village?’
- (a-b, Carstens 2005:220)

As exemplified in (82-a), Kilega allows wh-in-situ. Note that contrasted to the case of wh-fronting as in (82-b), no wh-agreement appears in the case of wh-in-situ. This means that wh-agreement occurs only when a wh-phrase is fronted, which suggests

that wh-agreement takes place in Spec-Head configuration.³⁰



Given that wh-agreement in Kilega is established in Spec-Head configuration, the presence of wh-agreement in object (or non-subject) extractions exemplified in

³⁰Carstens (2005) captures the correlation between the presence of wh-fronting and the presence of ϕ -feature agreement on C in Kilega with the following two assumptions, given which wh-agreement is established via *Agree*, rather than in Spec-Head configuration.

- (i) Agree (α , β) if α c-commands β ; α , β have matching features; there is no γ with matching features such that α c-commands γ and γ c-commands β . (Carstens 2005: 221)
- (ii) In Kilega, C has an EPP feature iff C has $u\phi$

Note, however, that as discussed in the previous section, some Bantu languages show a subject/object asymmetry in wh-extraction; wh-agreement is present in subject extraction while it is absent in object (or non-subject) extraction. Then, the acceptability of object extraction in Lubukusu clefts and Dzamba/Shingazidja wh-questions are problematic for Carstens' (2005) analysis because object's movement to [Spec, CP] seems to occur in spite of the absence of wh-agreement. That is, object's movement in these constructions suggests that C^0 has $u\phi$ -features, but if so, it is unclear why the sentence is grammatical despite the $u\phi$ -features are not checked (i.e., wh-agreement does not takes place). Thus I do not adopt Carstens' (2005) analysis, so that wh-agreement in Kilega and other Bantu languages is to be explained under the same framework as it is explained in Lubukusu, Dzamba and Shingazidja.

(79-b) and (79-c) suggests that a fronted wh-phrase retains its ϕ -features at [Spec, CP] in Kilega.

Remember that under the analysis proposed in this thesis, the following prediction can be made.

- (84) An object (or non-subject) can pied-pipe its ϕ -features to the domain of CP only if a subject (with ϕ -features) is not in an intervening position.

In the next subsection, I will show that the prediction is borne out in Kilega: when an object (or a non-subject) moves to the domain of CP in Kilega, a subject remains in [Spec, *v*P] and therefore it is not an intervenor for the object's pied-piping its ϕ -features to the landing site.

3.3.2 Subject in-situ in non-subject extraction in Kilega

As we have seen in the previous subsection, Kilega shows no subject/object asymmetry in wh-agreement; wh-agreement appears not only in subject extraction but also in object extraction.

- (85) *wh-fronting in Kilega*

- a. **Bikí** **bi-á-kás-il-é** bábo bíkulu mwámí mu-mwílo?
 what.8 CA.8-PAST-give-PERF-FV that.2 woman.2 chief.1 18-village.3
 'What did those women give the chief in the village?'
 (Kinyalolo 1991:21 (modified), den Dikken 2001:20)
- b. **Kúní** **kú-ta-ku-yan-ág-á** bána mu-kindi?
 where.17 CA.17-NEG-PRG-play-HAB-FV children.2 18-night
 'Where don't children usually play at night?' (Carstens 2005:231)

Note that in the examples of wh-fronting in (85), subject is post-verbal and no subject agreement appears. As observed by Kinyalolo (1992), a sentence becomes ungrammatical if subject agreement occurs with wh-agreement in wh-fronting.

- (86) a. **Bikí** **bi-á-kás-íl-é** bábo bíkulu mwámí mu-mwílo?
 what.8 CA.8-PAST-give-PERF-FV that.2 woman.2 chief.1 18-village.3
 ‘What did those women give the chief in the village?’
- b. ***Bikí** **bi-b-á-kás-íl-é** bábo bíkulu mwámí
 what.8 CA.8-SA.2-PAST-give-PERF-FV that.2 woman.2 chief.1
 mu-mwílo?
 18-village.3
 ‘What did those women give the chief in the village?’
 (a-b, Kinyalolo 1991:20)

One possible analysis to explain the fact that a subject is post-verbal in wh-fronting is to propose that the word order is derived by I-to-C movement assuming that subject is in [Spec, IP], as illustrated in (87).

- (87) $[_{CP} \text{ wh-phrase } C^0 - [I^0 - \nu^0 - V^0]_i \text{ } [_{IP} \text{ Subject } t_i \text{ } [_{vP} \dots]]]$
 \uparrow
 I-to-C movement

However, the following data suggest that a post-verbal subject in non-subject wh-fronting never moves to [Spec, IP]. First, look at the case where an auxiliary verb appears in a declarative sentence. As shown in the examples (80-c) and (88), when an auxiliary verb is in a sentence, subject agreement appears both on the auxiliary verb and on the main verb in a normal declarative sentence.

- (88) a. Masungá **má**-kilí **m**-á-yik-u-á.
yam.6 SA.6-be.still SA.6-ASP-cook-PASS-FV
‘The yams are still being cooked.’ (Carstens 2010:46)
- b. Bána **bá**-sí **b**-á-li-á mupunga.
children.2 SA.2-have.already SA.2-ASP-eat-FV rice.3
‘The children have already eaten the rice’ (Kinyalolo 1991:159)

Next, look at the case where a non-subject wh-phrase is fronted.

- (89) Buúní **bú**-si **bu**-á-li-á Kandóló mupunga
how.14 CA.14-have.already SA.14-ASP2-eat-FV Kandolo.1 rice.3
wéneéné?
himself
‘How come Kandolo is about to eat rice?’ (Kinyalolo 1991:182)

As exemplified in (89), when an auxiliary verb is in a sentence with non-subject wh-fronting, the main verb appears before the subject and it agrees with the fronted wh-phrase, but not with the post-verbal subject. If the subject moves to [Spec, IP] (through [Spec, AgrP] of the main verb) and I-to-C movement of the auxiliary verb takes place, the subject should be in a position between the auxiliary verb and the main verb should be able to agree with the subject, as illustrated in (90).

- (90) wh-agreement agreement
- $$[_{CP} \text{ wh } C^0 - [I^0 - \text{Aux}^0]_i [_{IP} \text{ Subject}_j t_i [_{auxP} \dots [_{AgrP} t_j \text{ Agr}^0 [_{vP} t_j v^0 \dots]]]]]$$

Thus, based on the observation that a subject appears after the main verb and it cannot agree with the main verb in non-subject wh-fronting in Kilega, Kinyalolo (1991) and Carstens (2005) conclude that subject is in-situ (i.e., in [Spec, *v*P]) when

a non-subject wh-phrase is fronted in Kilega.

$$(91) \quad \begin{array}{c} \text{wh-agreement} \qquad \qquad \qquad \text{agreement} \\ \downarrow \qquad \qquad \qquad \downarrow \\ [\text{CP } \text{wh}_i \text{ C}^0 [\text{IP } (\text{t}_i?) \text{ I}^0 [\text{AuxP } \text{Aux}^0 [\text{AgrP } \text{t}_i \text{ Agr}^0\text{-v}^0\text{-V}^0 [\text{vP } \underline{\text{Subject}} \text{ t}_i]]]]] \end{array}$$

Then given the conclusion that a subject remains in [Spec, *v*P] in non-subject extraction in Kilega, the prediction (84) under the present analysis in this thesis, which is repeated in (92), is borne out.

- (92) An object (or non-subject) can pied-pipe its ϕ -features to the domain of CP only if a subject (with ϕ -features) is not in an intervening position.

That is, as we have seen in Section 3.3.1, Kilega shows wh-agreement even in non-subject fronting. Given that wh-agreement in Kilega is established in Spec-Head configuration, the presence of the wh-agreement in non-subject fronting indicates that the fronted wh-object/adjunct retains its ϕ -features in the domain of CP. Now, as stated in the prediction (92), the fronted non-subject wh-phrase can pied-pipe its ϕ -features to [Spec, CP] because in non-subject extraction in Kilega, a subject stays in [Spec, *v*P], so it is not an intervener for the object/adjunct's pied-piping.

- (93) *Non-subject extraction in Kilega*

$$\begin{array}{c} \text{wh-agreement} \\ \downarrow \\ [\text{CP } \text{wh}_{-[\text{wh}, \phi, \dots]_i} \text{ C}^0 [\text{IP } \cdot \cdot \cdot [\text{vP } \text{wh}_{-[\text{wh}, \phi, \dots]_i} [\text{vP } \text{Subject } \cdot \cdot (\text{wh}_{-[\text{wh}, \phi, \dots]_i})]]]] \\ \uparrow \\ \checkmark \text{ pied-piping of } \phi\text{-features} \end{array}$$

Thus, the prediction under my analysis holds for wh-agreement in Kilega. In the next subsection, I will discuss some variations of Bantu languages that have a property similar to Kilega.³¹

3.3.3 Variation of Kilega-type languages

In the previous subsections, we have seen that (i) Kilega shows wh-agreement even in non-subject extraction, (ii) the subject stays in [Spec, *v*P] in non-subject extraction in Kilega, and (iii) the properties (i) and (ii) are what is predicted under the proposed analysis, as stated in (92). In this subsection, we will look at another case, Dzamba object relative clause, which shows the same properties as non-subject extraction in

³¹Kinyalolo (1991) observes that subject agreement appears even in non-subject extraction when the subject is a null subject (i.e., there is no overt subject).

- (i) a. Kúní kú-ta-ku-yan-ág-á bána mu-kindi?
 where.16 CA.16-NEG-SA.2-PRG-play-HAB-FV children.2 18-night.7
 ‘Where don’t children usually play at night?’ (Carstens 2005:231)
- b. Kúní kú-ta-**bá**-ku-yan-ág-á mu-kindi?
 where.16 CA.16-NEG-SA.2-PRG-play-HAB-FV 18-night.7
 ‘Where don’t they usually play at night?’ (Carstens 2005:244)

I assume, along the line of Alexiadou and Anagnostopoulou (1998), that null subjects in Kilega are clitic-like pronominal elements that adjoin to I^0 . That is, a subject agreement morpheme that appears when there is no overt subject is a pronominal subject that base-generates in [Spec, *v*P] and undergoes adjunction to I^0 . Therefore, a fronted non-subject can carry its ϕ -features to [Spec, CP] by stopping by [Spec, IP], by which the pronominal subject is not an intervener.

- (ii) [CP where_j C⁰ [IP t_j I⁰-**ba**_i [*v*P t_j t_i [. . .]]]]

Kilega.³²

First, let us look at declarative sentences in Dzamba again. As exemplified in (94), pre-verbal agreement morpheme agrees with the preceding subject.

(94) *Dzamba declaratives*

- a. oPɔsɔ **a**-tom-áki mu-ndɔndɔ lɔɔme.
 Pɔsɔ.1 SA.1-send-IMPF 3-jug today
 ‘Pɔsɔs sent a jug today’ (Bokamba 1976:97)
- b. i-mu-ndɔndɔ **mu**-bung-í.
 the.jug.3 SA.3-lose-IP
 ‘The jug is lost.’ (a-b, Bokamba 1976:97)

In relative clauses, an additional agreement morpheme appears before subject agreement, which is analyzed as wh-agreement.³³ As shown in (95) and (96), wh-agreement appears not only subject relatives but also in object relatives.

(95) *Subject relatives in Dzamba*

- a. [babato **bá**-ta-bá-kpa-áki imundɔndɔ emba] ba-kim-í.
 the.persons CA.2-NEG-SA.2-take-PAST the.jug not SA.2-flee-IP
 ‘The persons who didn’t take the jug just fled.’ (Bokamba 1976:95)
- b. [izikɛngɛ **í**-zi-bung-í o kalasi zi-ba-áki] za-nga.
 the.slate CA.5-SA.5-loose-PAST at school SA.5-be-IMPF of-me
 ‘The slate which is lost at school was mine.’ (Bokamba 1976:90)

³²As we have seen Section 3.2.5, wh-questions show a different agreement pattern from relative clauses in Dzamba, which is the same pattern as Lubukusu extraction.

³³No subject agreement appears if the relative noun is [+human] and no NEG morpheme appears.

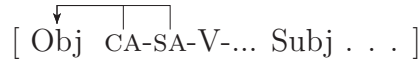
- (i) [omoto ó-(*)a-kpa-áki i-mu-ndɔndɔ] a-kim-í.
 the.person CA.1-SA.1-take-PAST the.jug SA.1-flee-IP
 ‘The person who took the jug just fled.’ (Bokamba 1976:89)

(96) *Object relatives in Dzamba*

- a. [imundɔndɔ **í**-mu-tom-áki Pɔsɔ lɔme] mu-bung-í.
 the.jug.3 CA.3-SA.3-send-IMPF Pɔsɔ.1 today SA.3-lose-IP
 ‘The jug which Pɔsɔ sent today is lost.’ (Bokamba 1976:97)
- b. [izibata **í**-zi-eza-áki oPɔsɔ ba-butu lɔme] zi-kimí.
 the.duck.5 CA.5-SA.5-give-IMPF oPɔsɔ the.guests today SA.5-left
 ‘The duck that oPɔsɔ gave the guests today ran away.’
 (Bokamba 1976:99)

Thus, there is no subject/object asymmetry in Dzamba relatives, as well as Kilega extraction.

Notice, importantly, that in object relatives, the subject appears in a post-verbal position and subject agreement takes place with the preceding relative nouns, rather than with the post-verbal subject.

- (97) agreement

 [Obj CA-SA-V-... Subj . . .]

Moreover, the following data show that it is not the case that a post-verbal subject in object relatives is derived via a rightward movement.

- (98) a. *[imundɔndɔ **í**-mu-tom-áki lɔme **Pɔsɔ**] mu-bung-í.
 the.jug.3 CA.3-SA.3-send-IMPF today Pɔsɔ.1 SA.3-lose-IP
 ‘The jug which Pɔsɔ sent today is lost.’ (Bokamba 1976: 98)
- b. *[i-zi-bata **í**-zi-eza-áki ba-butu **oPɔsɔ** lɔme] zi-kimí.
 the.duck.5 CA.5-SA.5-give-IMPF the.guests oPɔsɔ.1 today SA.5-left
 Intended: ‘The duck that oPɔsɔ gave the guests today ran away.’
- c. *[i-zi-bata **í**-zi-eza-áki ba-butu lɔme **oPɔsɔ**] zi-kimí.
 the.duck.5 CA.5-SA.5-give-IMPF the.guests today oPɔsɔ.1 SA.5-left
 Intended: ‘The duck that oPɔsɔ gave the guests today ran away.’

That is, if a subject can undergo rightward movement, by which it appears post-verbally in object relatives, it should be able to follow an element inside vP/VP . However, that is not the case, as shown by the unacceptability of the sentences in (98).

- (99) a. $*[\dots I^0-v^0-V^0 [[[_{vP} t_i [_{VP} DO \dots]]] Adv] \mathbf{Subj}_i]]$
 b. $*[\dots I^0-v^0-V^0 [[[_{vP} t_i [_{VP} DO \dots]]] \mathbf{Subj}_i] Adv]]$

Thus, it is concluded, from the strict word order of the post-verbal subject and the lack of subject agreement with the post-verbal subject, that a subject stays in [Spec, vP] in object relatives in Dzamba.

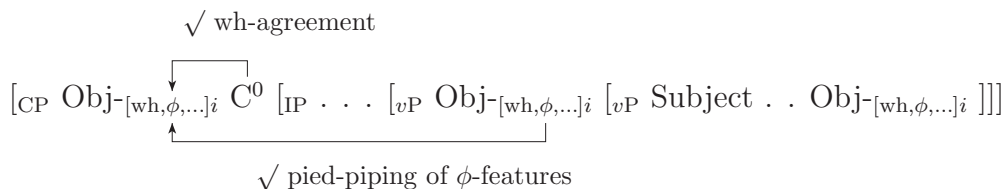
- (100) $[\dots I^0-v^0-V^0 [[[_{vP} \mathbf{Subj} [_{VP} DO \dots]]] Adv]]$

To summarize the properties of Dzamba relative clauses, (i) Dzamba relative clauses show wh-agreement in object extraction, as well as subject extraction, and (ii) in object relative clauses, a subject stays in-situ position (i.e., [Spec, vP]). These properties, as well as parallel ones in Kilega, are what is predicted by the proposed analysis.

- (101) An object (or non-subject) can pied-pipe its ϕ -features to the domain of CP only if a subject (with ϕ -features) is not in an intervening position.

That is, an object operator (or an object itself under Kayne-type analysis (Kayne 1994)) can pied-pipe its ϕ -features in Dzamba relatives because a subject is in [Spec, v P] so it is not an intervener for the object's pied-piping.

(102) *Object relative clause in Dzamba*



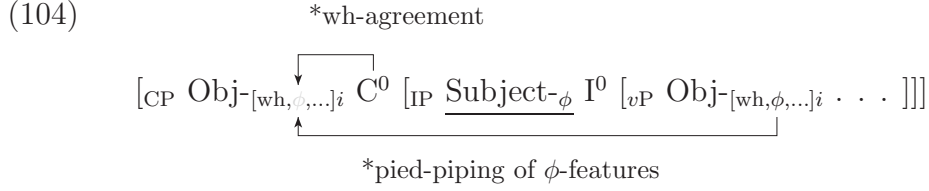
As shown in the following example, if the subject appears before a verb and undergoes subject agreement in object relatives, the sentence becomes unacceptable.³⁴

(103) *[i-zi-bata oPɔso í-a-eza-ki ba-butu loome] zi-kimɪl.
the.duck.5 oPɔso.1 CA.5-SA.1-give-IMPF the.guests today SA.5-left
Intended: ‘The duck that oPɔso gave the guests today ran away.’

(Bokamba 1976:99)

Under the present analysis, this is because the ϕ -features of the subject, when it is in [Spec, IP] to undergo subject agreement, are intervener for an object's pied-piping its ϕ -features to [Spec, CP]. Therefore, wh-agreement cannot take place between C⁰ and the fronted object.

³⁴In the unacceptable example, there are three sequences of vowels *i-a-e* in the verbal chunk. Since a series of more than two different vowels is prohibited generally in Bantu languages, it is possible that the ungrammaticality of the sentence is due to this point.



Like Dzamba, Kirundi (Henderson 2006, Henderson 2011), Linkila (Bokamba 1976), Lingala (Henderson (2007) among others), and a dialect of Chichewa (Bresnan and Kanerva 1989) also show the same pattern in object (or non-subject) relative clauses. These cases also can be explained in the same way.

3.4 Kinande

3.4.1 Agreement pattern in Kinande

In this section, we will look at another Bantu language, Kinande, which is also spoken in the Democratic Republic of the Congo. Like Kilega, and differently from Lubukusu, Kinande shows wh-agreement also in object extraction, as exemplified in (105).

- (105)
- a. IyondI **yO** Kambale a-langIra?
 who(SG).1 CA.1 Kambale SA.1-saw
 ‘Who did Kambale saw?’
 - b. ABahI **Bo** Kambale a-langIra?
 who(PL).2 CA.2 Kambale SA.1-saw
 ‘Who did Kambale saw?’
 - c. EkIhI **kyO** Kambale a-langIra?
 what(SG).7 CA.7 Kambale SA.1-saw
 ‘What did Kambale saw?’

- d. EBIhI **ByO** Kambale a-langIra?
 what(PL).8 CA.8 Kambale SA.1-saw
 ‘What did Kambale saw?’ (Rizzi 1990:55)

As shown in the following example, an in-situ wh-phrase does not trigger wh-agreement in Kinande, which suggests that wh-agreement is established in Spec-Head configuration in Kinande.

- (106) *Kyo Kambale a-alangira **ki**?
 CA.7 Kambale SA1-saw what.7
 Intended: ‘What did Kambale saw?’ (Schneider-Zioga 2007:423)

Notice that although Kinande is similar to Kilega in that both of the two languages show wh-agreement even in object extraction, the form of object extraction in Kinande is different from the one in Kilega in that the subject appears before the verb and it undergoes subject agreement.

- (107) agreement agreement
 ↓ ↓
 [Obj CA Subj SA-V . . .]

These properties suggest that a subject does not stay in [Spec, *v*P] as in Kilega, but is in a subject position in which subject agreement takes place.

3.4.2 Subject as Topic in Kinande

As shown in the previous subsection, Kinande shows wh-agreement even in object extraction. Also a subject does not stay in [Spec, *v*P] in object fronting. Now,

remember the corollary of the proposed theory on generalized pied-piping.

- (108) An object (or non-subject) can pied-pipe its ϕ -features to the domain of CP only if a subject (with ϕ -features) is not in an intervening position.

Given the corollary (108), the subject position in Kinande should not be [Spec, IP], but a position that is not intervening for an object's movement to the domain of CP. In what follows, I show that the canonical subject position is not [Spec, IP], but a subject is dislocated via topicalization in Kinande. I assume, with Baker (2003), that a subject is in an IP-adjoined position in Kinande. Given this, it is possible to explain the presence of wh-agreement in object extraction in Kinande: Because an IP-adjoined position and the immediately higher [Spec, CP] are within the same minimal domain, a subject in the IP-adjoined position is not an intervener for an object's pied-piping its ϕ -features to [Spec, CP].

- (109) minimal domain $\sqrt{\text{wh-agreement}}$
- | | | |
|---|--|--|
| <div style="display: inline-block; width: 100px; height: 15px; background-color: white; border: 1px solid black; margin-bottom: 5px;"></div> <div style="display: inline-block; width: 100px; height: 15px; background-color: white; border: 1px solid black;"></div> | [IP Subj- ϕ] | [IP [vP Obj _i -wh, ϕ . . .]]] |
| <div style="display: inline-block; width: 100px; height: 15px; background-color: white; border: 1px solid black;"></div> | <div style="display: inline-block; width: 100px; height: 15px; background-color: white; border: 1px solid black;"></div> | |
- $\sqrt{\text{pied-piping of } \phi}$

Thus, the corollary in (108) is supported by Kinande wh-fronting.

Let us, then, look at supporting evidence suggesting that a subject in Kinande is topicalized. Firstly, the subject that appears in a pre-verbal position and undergoes subject agreement (hereinafter, I called it “agreed-with subject”) cannot be interpreted as nonspecific indefinite NPs. Progovac (1993) observes that, contrasted

with the augmented NPs, non-augmented NPs, which are non-referential NPs, cannot appear in the canonical subject position in (the matrix) declarative clauses, as shown in (111).

- (110) a. O-mukali anzire Yohani.
AUG-woman.1 SA.1.like Yohani
'The woman likes John.'
- b. O-mukali si-anzire Yohani.
AUG-woman.1 NEG-SA.1.like Yohani
'The woman doesn't like John.' (a-b, Progovac 1993:260)
- (111) a. *Mukali anzire Yohani.
woman.1 SA.1.like Yohani
Intended: 'A (non-specific) woman likes John'
- b. *Mukali si-anzire Yohani.
woman.1 NEG-SA.1.like Yohani
Intended: 'No woman likes John.' (a-b, Progovac 1993:260)
- c. *Bakali ba-ahuka ebikene.
women.2 SA.2-cooked yams
Intended: '(Non-specific) women cooked the yams.'
- (Schneider-Zioga 2007:406)

Note that a non-augmented NP can be the agreed-with subject in *wh*-questions, as shown in (112). However, in such a case, the subject must be interpreted as specific.

- (112) Ekihi kyo' mukali a-ahuka
 what.7 CA.7 woman.1 SA.1-cooked
 'What did the woman cook?'
 *'What did a (non-specific) woman cook?' (Schneider-Zioga 2007:409)

As shown in the following, a nonspecific indefinite subject is expressed by being clefted as in (113-a), or by being in a post-verbal position without subject agreement via subject-object inversion/locative inversion as in (113-b) or via passivization as in (113-c).

- (113) a. ni bakali bo ba-ahuka ebikene.
 COP women.2 CA.2 SA.2-cooked yams.8
 ‘(non-specific) Women cooked the yams.’
 (lit: ‘It is women that cooked the yams.’) (Schneider-Zioga 2007:407)
- b. olukwi si-lu-lisenya bakali (omo-mbasa).
 wood.11 NEG-SA.11-chop women.2 LOC.18-axe.9
 ‘Women (in general) do not chop wood (with an axe).’
 (Baker 2003:113)
- c. ebikene by-ahuka-wa na bakali.
 yams.8 SA.8-cooked-PASS with women.2
 ‘The yams were cooked by (non-specific) women’
 (Schneider-Zioga 2007:407)

The fact that the agreed-with subject cannot be interpreted as a non-specific indefinite can be explained provided that the agreed-with subject is topicalized. That is, since the subject in the examples (111) is topicalized, as well as the topicalized object in (114-b), it cannot be interpreted as indefinite and nonspecific.

(114) *Kinande Topicalization*

- a. O-mukali mo-a-teta-gula kindu.
 AUG-woman.1 AFF-SA.1-NEG.PAST-buy thing.7
 ‘The woman didn’t buy anything.’
- b. *(E)-kindu o-mukali mo-a-teta-ki-gula
 AUG-thing.7 AUG-woman.1 AFF-SA.1-NEG.PAST-OM.7-buy
 ‘*Anything, the woman didn’t buy it.’ (a-b, Baker 2003:111)

In object topicalization in Kinande, a topicalized XP is fronted and an object marker (OM) whose form varies depending on noun class of the fronted XP appears attached to a verbal stem as in (114-b). In such a topicalized sentence, a topicalized XP cannot be interpreted as indefinite and nonspecific. Thus, the obligatory specific reading of the agreed-with subject follows from the assumption that the agreed-with subject is topicalized in Kinande.

The second piece of evidence is that the agreed-with subject must take wide scope over objects.

- (115) Omukali a-gula obuli ritunda.
 woman.1 SA.1.PAST-buy every fruit
 ‘A (single) woman bought every fruit. ($*\forall > \exists$) (Baker 2003:120)

This is contrasted to English cases, where a subject allows inverse scope reading.

- (116) A woman bought every fruit. ($\sqrt{\forall > \exists}$)

The absence of the inverse scope reading is observed in parallel in topicalization sentences in Kinande.

- (117) ‡Eritunda, obuli mukali mo-a-li-gulire.
 fruit.5 every man AFF-SA.1.PAST-OM.5-buy
 ‘A fruit, every woman bought it’ ($*\forall > \exists$) (Baker 2003:120)

In general, a topicalized element does not allow an inverse scope reading. Thus, the fact that the agreed-with subject does not allow an inverse scope reading is compatible with the assumption that the subject is topicalized in Kinande.

or v^0 .

- b. A topicalized XP is base-generated in a dislocated position.

As evidence for the proposal (119-a), OM_s and in-situ objects are in complementary distribution. Let us, first, look at the examples (120). As shown in the examples, an overt object does not have to be present if an OM appears, but it must be present if no OM appears.

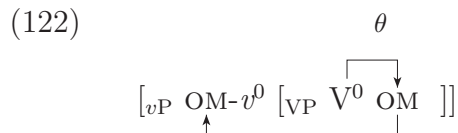
- (120) a. Ng-u-li-gula ebisungu, Kambale a-luandi-**bi**-kuka.
 if-SA.2SG-NPAST-buy potatoes.8, Kambale SA.1-will-OM.8-cook
 ‘If you buy potatoes, Kambale will cook them’
- b. #Ng-u-li-gula ebisungu, Kambale a-luandi-kuka.
 if-SA.2SG-NPAST-buy potatoes.8, Kambale SA.1-will-cook
 ‘If you buy potatoes, Kambale will do the cooking.’ (Baker 2003:110)

In the example (120-a), where the OM *bi* for class8 nouns appears, the sentence has the meaning where the verb *kuk* “cook” is a transitive with a null object that refers to the antecedent “potatoes”. In the example (120-b), where no OM appears, the sentence does not have such a meaning; in the sentence, the verb *kuk* “cook” must be interpreted as intransitive, so the meaning is pragmatically odd.

Secondly, as exemplified in the following, OM cannot appear if an object is not dislocated.

- (121) N-a-(*ri)-gula eritunda.
 SA.1sg-PAST-OM.5-bought fruit.5
 ‘I bought a fruit.’ (Baker 2003:110)

Thus, OMs cannot appear with in-situ objects and they must appear without them. This complementary distribution can be explained given that OMs and in-situ objects base-generate in the same position, i.e., [Complement, VP], as an argument of a verb. Then, I assume that OMs are pronominal clitics that adjoin to v^0 .



As evidence for the proposal (119-b) which states that a topicalized NP is base-generated in a dislocated position, topicalized objects, contrasted to in-situ objects, can (and must) appear with OMs, as shown in (123-b).

- (123) a. N-a-(*ri)-gula eritunda.
SA.1sg-PAST-OM.5-bought fruit.5
'I bought a fruit.'
- b. Eritunda, n-a-*(ri)-gula.
fruit.5 SA.1sg-PAST-OM.5-bought
'The fruit, I bought it' (Baker 2003:110)

This suggests that a topicalized object is base-generated not in an argument position, i.e., [Complement, VP], but a dislocated position. I assume, with Baker (2003), that a topicalized object occupies a CP-adjoined position.

- (124) *Object Topicalization in Kinande*
- [_{CP} Obj_J [_{IP} . . . [_{vP} OM₁-v⁰ [_{VP} V⁰ OM₁]]]]
- base-generation ↑ └──────────┘

As for the case of subjects, an overt subject does not have to be present if a subject agreement (SA) morpheme appears, as exemplified in (123). Moreover, as exemplified in (125), SA cannot agree with a post-verbal subject. Instead, the expletive, which is the class 16 subject agreement morpheme (i.e., SA.16), appears with a post-verbal subject.

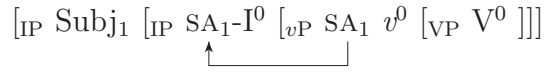
- (125) a. *mo-**a**-satire (o-)mukali.
 AFF-SA.1-danced AUG-woman.1
 Intended: ‘The woman danced’ (Baker 2003:111)
- b. mo-**has**-satire mukali.
 AFF-SA.16-danced woman.1
 ‘A woman danced’ (Halpert 2009:6-7)

Thus, post-verbal subjects and SAs excepting the expletive SA.16 are in complementary distribution, while pre-verbal subject and the SA can/do not have to co-occur. This pattern, as well as in the case of OMs, can be explained given that subject agreement morphemes are pronominal clitics, and they base-generate in [Spec, *v*P] (when it agrees with the thematic subject) to undergo adjunction to I^0 as illustrated in (126-a), and a topicalized subject (or agreed-with subject) base-generates in a position in the left-periphery. I assume, with Baker (2003), that this position is an IP-adjoined position, differently from the position for object topics, whose evidence we will look at later.

- (126) a.
- $$\begin{array}{c}
 \theta \\
 \downarrow \\
 \text{[IP SA-} I^0 \text{ [} v\text{P SA } v^0 \text{ [VP } V^0 \text{]]]} \\
 \uparrow
 \end{array}$$

b. *Subject Topicalization in Kinande*

base-generation



When a subject is in the post-verbal position, the subject itself base-generates in [Spec, *v*P]. In this case, an expletive clitic is inserted into an adjoined position to I^0 to satisfy an EPP requirement as in (127), or another pronominal clitic undergoes adjunction to I^0 to cause a topicalization as in (128).³⁵

(127) a. $[\text{IP } \text{SA.16-I}^0 [\text{vP } \text{Subj } v^0 [\text{VP } \dots]]]$

b. mo-has-satire mukali.
AFF-SA.16-danced woman.1
'A woman danced' (Halpert 2009:6-7)

(128) a. $[\text{IP } \text{XP}_1 [\text{IP } \text{CL}_1\text{-I}^0 [\text{vP } \text{Subj } v^0 [\text{VP } \text{V}^0 \text{CL}_1]]]]$

b. olukwi si-lu-lisenya bakali (omo-mbasa).
wood.11 NEG-SA.11-chop women.2 LOC.18-axe.9
'Women (in general) do not chop wood (with an axe).
(Baker 2003:113)

³⁵While the presence of OMs is optional (since they do not appear with in-situ objects), SAs obligatorily appear with pre-verbal subjects.

(i) Abakali *(ba)-[a]-gula eritunda.
women.2 SA.2-PAST-buy fruit.5
'The women bought a fruit.' (Baker 2003:112)

I suggest that this is because (augmented) subjects must be topicalized in Kinande by some discourse constraint in Kinande.

As for the position of a topicalized XP, Baker (2003) shows that dislocated objects and dislocated subjects occupy different positions. Firstly, as exemplified in (129), a dislocated object can co-occur with a dislocated subject. In this case, the object must precede subject, which indicates that a topicalized object occupies a higher position than a topicalized subject.

- (129) a. Eritunda, omukali a-ri-gula.
 fruit.5 woman.1 SA.1.PAST-OM.5-buy
 ‘The fruit, the women bought it.’
- b. *Omukali, eritunda a-ri-gula.
 woman.1 fruit.5 SA.1.PAST-OM.5-buy
 ‘The fruit, the women bought it.’ (a-b, Baker 2003:116)

Secondly, as shown in the following, the agreed-with (or topicalized) subject can appear after a complementizer that shows wh-agreement, whereas the topicalized object cannot appear in this position.

- (130) a. Ehilanga hyo **Kambale** a-ha omukali.
 peanuts.19 CA.19 Kambale.1 SA.1.PAST-give woman.1
 ‘It’s peanuts that Kambale gave to the woman.’
- b. *Ehilanga hyo **omukali**, n-a-mu-ha
 peanuts.19 CA. woman.1 SA.1SG-PAST-OM.1-give
 ‘It’s peanuts that woman, I gave to her.’ (a-b, Baker 2003:116)

Note that as shown in (131-a) the agreed-with subject can appear also before the complementizer.

- (131) a. ekihi kyo Yosefu a-kaBula [**Kambale** nga-kyo
 what.7 CA.7 Yosef.1 SA.1-wonder Kambale.1 COMP-CA.7
 a-kalangIra.
 SA.1-see
 ‘What does Yosefu wonder if Kambale sees?’ (Schneider-Zioga 2000)
- b. ekihi kyo Kambale a-si [nga-kyo **Yosefu**
 what.7 CA.7 Kambale.1 SA.1-know COMP-CA.7 Yosefu.1
 a-kalengekanaya [nga-kyo **Mary**’ a-kahuka]]
 SA.1-think COMP-CA.7 Mary.1 SA.1-cook
 ‘What did Kambale know that Yosefu thinks that Mary is cooking
 (for dinner)?’ (Den Dikken 2009:53)

Thus, I assume, with Baker (2003), that there are two topic positions, an IP-adjoined position and a CP-adjoined position, and the agreed-with subject can appear in either position while the agreed-with object must appear in the CP-adjoined position.³⁶

- (132) wh-agreement
- $$\begin{array}{c} \downarrow \\ \text{[CP Topic [CP Focus C}^0 \text{ [IP Topic [IP . . .]]]]} \end{array}$$

³⁶Another way to capture the word order is to assume that the agreed-with object appears in the high [Spec, TopP] while the agreed with subject can appear in high or low [Spec, TopP], along the lines of the articulated CP structure proposed by Rizzi (1997), as in (i).

- (i) [Force [Topic [Focus [Topic [Finite [IP . . .]]]]]]]

However, in the next section, I will argue that the lower Topic position and Focus position that wh-movement targets are within the same minimal domain, and since I use the definition of the minimal domain to calculate locality/anti-locality in the *category*-sensitive way (Chomsky 1995, Koizumi 1993, Abels 2003, Bošković 2005), but not in the the *function*-sensitive way (Grohmann 2000), lower [Spec, TopP] and [Spec, FocP] are not in the same domain under the articulated CP analysis. For this reason, I adopt the simple CP structure as in (132)

To summarize so far, I showed that the agreed-with subject in Kinande shows the same properties as a topicalized element. On the basis of this observation, I assume that the agreed-with subject is topicalized, and propose that in Topicalization in Kinande, a pronominal clitic base-generates in an argument position and undergoes adjunction to I^0 or v^0 , by which the agreed-with XP base-generates in a Topic position in the left periphery. In the next subsection, I argue that such a property of the agreed-with subject makes it possible that wh-agreement appears even in object extraction in Kinande, discussing that the agreed-with subject position and a Focus position that wh-movement targets are in the same minimal domain, which is motivated by anti-agreement phenomenon observed in subject extraction.

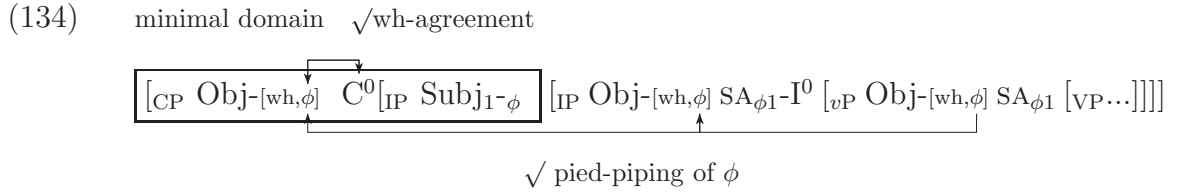
3.4.3 Analysis

In the previous subsection, I argued that the agreed-with subject is base-generated in an IP-adjoined position via Topicalization.

$$(133) \quad [_{IP} \text{Subj}_1 [_{IP} \text{SA}_1\text{-}I^0 [_{vP} \text{SA}_1 [_{VP} \dots]]]]$$

Given this analysis, it is possible to explain why wh-agreement can appear even in object extraction in Kinande under the proposed analysis. As illustrated in (134), an object, first, moves to a vP -edge position so that a pronominal clitic (i.e., SA) is not an intervener. Then it moves to [Spec, IP] so that the clitic that adjoins to

I^0 is not an intervener.³⁷ Then finally, it moves to [Spec, CP]. Under the present analysis, an IP-adjoined position and a Spec position of the immediately higher CP are within the same minimal domain. Thus, the agreed-with subject in the IP-adjoined position is not an intervener for the object's pied-piping of its ϕ -features to [Spec, CP].



Therefore, the object can carry its ϕ -features to the landing site and it undergoes wh-agreement.³⁸

³⁷I assume that in this case, an EPP feature is checked by the moved object, by which the object can stop by the [Spec, IP].

³⁸Schneider-Zioga (2007) observes that in contrast with the case where the subject is at the beginning of the clause, a non-referential NP like an NPI and a wh-phrase can be the agreed-with subject if another wh-phrase is fronted to precede the subject, as exemplified in (i) and (ii).

- (i) a. ***Mukali** si-a-anzire Yohani.
 woman.1 NEG-PAST.SA.1-like Yohani
 Intended: ‘No woman liked John.’ (Schneider-Zioga 2007:406)
- b. Ekihi kyo **mukali** sy-a-ngahuka?
 what.7 CA.7 woman.1 NEG-PAST.SA.1-cook
 ‘What did no woman cook?’ (Schneider-Zioga 2007:408)
- (ii) a. *(**Iyo**)**ndi** a-alangira Marya?
 who SA.1-saw Mary
 Intended: ‘Who saw Mary?’
- b. Ekihi kyo **ndi** a-kalangira.
 what.7 CA.7 who.1 SA.1-sees
 ‘What (does) who see?’ (Schneider-Zioga 2007:408)

Under this analysis, the agreed-with subject position and a position where wh-agreement takes place are within the same minimal domain. This is supported by anti-subject-agreement phenomenon found in clause-internal subject extraction in Kinande. As observed and discussed in Schneider-Zioga (1995, 2000, 2002, 2007), when a subject wh-phrase is fronted within a clause, the canonical subject-agreement cannot appear. Instead, a special form of agreement appears. As exemplified in (135), in declarative sentences or object wh-fronting, the subject agreement with a class1 noun appears as *a*. In contrast to this, the subject agreement cannot appear as *a*, but must be *u*, when the subject itself is extracted, as shown in (136). This

Given this observation, Schneider-Zioga (2007) argues that in such a case, the subject is not topicalized (i.e., in a Topic position), but it is in [Spec, IP].

Note, however, that if this is on the right track, the presence of SA in (i-b) and (ii-b) suggests that subject agreement can take place in [Spec, IP]. Then, it is unclear why anti-subject-agreement effects appear in subject extraction.

For NPI licensing, the acceptability of the sentence (1-b) can be due to the fact that the sentence is a question. As shown in the following English examples, an NPI cannot be licensed in subject position in declaratives, but it can be licensed in interrogatives (even without negation).

- (iii) a. *Anyone didn't come.
 b. Did anyone not come?
 c. Did anyone come?

Also in Kinande, an NPI in the pre-verbal subject position can be licensed in interrogative sentences even without negation.

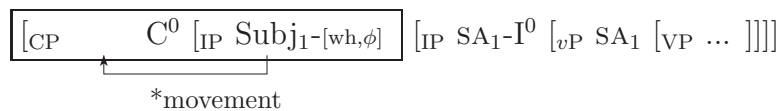
- (iv) Hane mukali anzire Yohani (kwe)?
 COP woman SA.1.like John Q
 'Does any woman like John?' (Progovac 1993:261)

phenomenon is called anti-agreement (Schneider-Zioga 2000, 2002, and 2007).

- (135) a. Yosefu **a**-kayenda.
 Joseph.1 SA.1-leave
 ‘Joseph is leaving.’ (Schneider-Zioga 1995:69)
- b. Ekihi kyo Kambale **a**-langIra?
 what.7 CA.7 Kambale SA.1-saw
 ‘What did Kambale saw?’ (Schneider-Zioga: 2007:412)
- (136) Iyondi yo ***a/u**-langira Marya.
 who.1 CA.1 SA.1/ANTI.SA-saw Mary
 ‘Who saw Mary?’ (Schneider-Zioga: 2007:404)

Under the proposed analysis, the lack of canonical subject agreement can be accounted for. That is, a position that the agreed-with subject occupies (i.e., an IP-adjoined position) and [Spce, CP] are within the same minimal domain, so a movement from the former position to the latter one is prohibited by the anti-locality condition on movement.

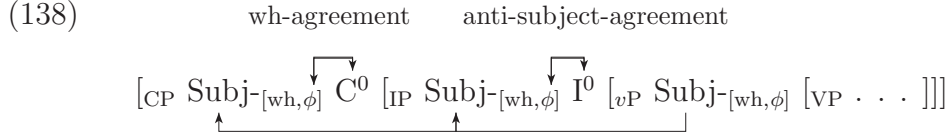
- (137) minimal domain



That is why a focalized subject with wh-agreement and the canonical subject agreement are incompatible.

Let us, then, consider how the acceptable case, where anti-agreement appears, is derived. Under the present analysis, in this case, a focalized subject itself is base-generated in [Spec, vP] and moves to [Spec, IP] to agree with I^0 , which is realized as

an anti-subject-agreement morpheme. Then, it moves to [Spec, CP] to undergoes wh-agreement with C^0 , as illustrated in the following.



Note that Schneider-Zioga (2007) claims that the anti-agreement phenomenon is due to the failure of the canonical agreement because the verb lacks ϕ -features for some reason. Under this analysis, the anti-locality morpheme u should be a default agreement form and it appears whenever subject agreement fails. However, the following examples show that it is not the case.

- (139)
- | | | |
|----|---------------------------------------|----------------------------|
| a. | omukali oyo u-anzire Kambale. | |
| | woman.1 CA.1 ANTI.SA.1-like Kambale | |
| | ‘the/a woman that likes Kambale.’ | (Schneider-Zioga 2007:417) |
| b. | abakali bo ba -kahuka ebikene. | |
| | women.2 CA.2 ANTI.SA.1-cooked yams.8 | |
| | women that cooked the yams.’ | (Schneider-Zioga 2007:418) |

As shown in the above examples, the form of anti-subject-agreement varies depending on the class of the fronted subject. The variation of the anti-subject-agreement cannot be explained if the anti-subject-agreement is because of the failure of subject-agreement. Under the present analysis, on the other hand, it can be explained: Since, anti-agreement phenomenon is an agreement between I^0 and a subject DP, which is a different process of the canonical subject agreement, in which a pronom-

inal clitic adjoins to I^0 .³⁹

As we have seen above, subject extraction in Kinande shows anti-subject-agreement phenomenon, which can be explained under the proposed analysis, according to which the agreed-with subject position and the Focus position are within the same minimal domain. Note, however, that there is another way to account for the anti-subject-agreement phenomenon. That is, as suggested by Omer Preminger (p.c.), the impossibility of the canonical subject agreement in subject extraction also can be explained given the *Criterial Freezing* proposed by Rizzi (2006).

(140) *Criterial Freezing*

An element in a position dedicated to some scope-discourse interpretive property, a criterial position, is frozen in place.

³⁹As shown in (i), a pre-verbal subject and anti-subject-agreement are incompatible.

- (i) Kambale a/*u-alangira Marya.
 Kambale SA.1/ANTI.SA.1-saw Mary
 ‘Kambale saw Mary’ (Schneider-Zioga 2007:417)

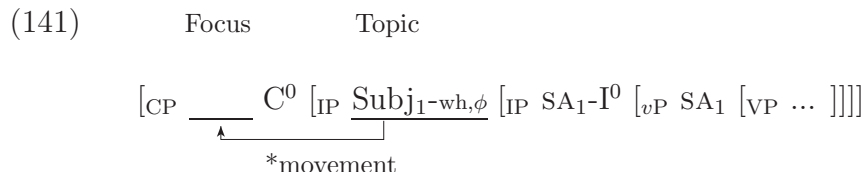
I propose that this is because definite or specific subjects must be topicalized in Kinande.

Moreover, a null subject is incompatible with anti-subject-agreement.

- (ii) a/*u-alangira Marya.
 SA.1/ANTI.SA.1-saw Mary
 Intended: ‘*pro* saw Mary’ (Schneider-Zioga 2007:417)

Under the proposed analysis, this is because the so-called null subject is a pronominal clitic, which is a subject agreement morpheme itself.

Given Criterial Freezing, the agreed-with subject, which is in a topic position that is a criterial position, is frozen in the position and cannot undergo a further movement to another criterial position like a focus position.



Thus, given this possibility, the anti-subject-agreement phenomenon is not a supporting evidence for the proposed analysis, under which the agreed-with subject and a focus position are in the same domain.

Note, however, that when we look at the case of long-distance subject fronting, we know that it is not the case that the anti-subject-agreement is due to Criterial Freezing. As shown in the example (142), the canonical subject agreement can appear if the subject undergoes a long-distance fronting.

- (142) Iyondi yo Kambale a-kabula ng' **a**-kalangira Marya?
 who.1 CA.1 Kambale SA-wonder COMP SA.1-see Mary
 ‘Who dose Yosef wonder if sees Mary?’ (Schneider-Zioga 2000:95)

The example (142) shows that a dependency between a topic position and a focus position is potentially allowed. Given that the dependency is established via movement, the grammaticality of the sentence (142) is problematic under the analysis with Criterial Freezing because such a movement from a topic position to a focus

position must be disallowed.⁴⁰

Note that as well as the canonical subject agreement, anti-subject agreement can appear in long-distance subject extraction, as exemplified in (143).

- (143) Iyondi yo Kambale a-kabula nga-**yo** **u**-kalangira Marya?
 who.1 CA.1 Kambale SA-wonder COMP-CA.1 ANTI.SA.1see Mary
 ‘Who dose Yosef wonder if sees Mary?’ (Schneider-Zioga 2000:95)

Also, notice that in the example(142), in which the canonical subject agreement appears, no wh-agreement appears in the embedded clause. If it appears, the sentence becomes unacceptable, as shown in (144).

- (144) *Iyondi yo Mary’a-kabula nga-**yo** **a**-birigenda?
 who.1 CA.1 MarySA-wonder COMP-CA.1 SA.1-left
 Intended: ‘Who dose Mary wonder if has left?’ (Schneider-Zioga 2000:112)

Thus, the generalization from the observations so far is as follows.

- (145) *Generalization on distribution of SA and wh-agreement*

Subject agreement and wh-agreement cannot co-occur if they are in the same clause.

The generalization can be accounted for by the anti-locality-type approach, but cannot be by the Criterial Freezing-type approach.

⁴⁰One may argue that the dependency is not established movement but a binding by base-generating the wh-subject in the surface position. If that is possible, a question arises as why the base-generation option cannot be used for the clause-internal case.

Let us, then, look at how the two possible cases (142) and (143) are derived under the present analysis.⁴¹ In the case of (142), in which the canonical subject agreement appears, Topicalization of the embedded subject is involved, by which the wh-subject is base-generated in the higher topic position, i.e., [Adjunct, CP], in the embedded clause.^{42,43} Then, from this position it undergoes a further movement into the matrix clause, as illustrated in (146-a). In the case of (143), in which the anti-subject-agreement appears, the wh-subject base-generates in [Spec, *v*P] and undergoes movement to [Spec, IP] and [Spec, CP] to have agreement with each Head. Then, it moves into the matrix clause, as illustrated in (146-b).

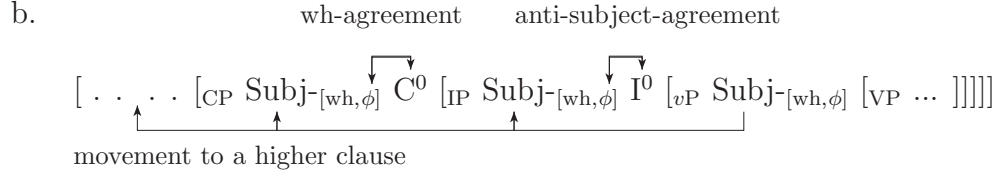
(146) *Long-distance subject extraction in Kinande*

- a. [. . . . [CP Subj_{1-wh,ϕ} (Foc) C⁰ [IP SA₁-I⁰ [_vP SA₁ [VP ...]]]]]
↑
movement to a higher clause

⁴¹The ungrammaticality of the sentence (144) is explained in the same way as in the case of clause-internal subject extraction. That is, since the agreed-with subject position and the wh-agreement position are within the same minimal domain, the movement from the former to the latter is prohibited by the anti-locality condition.

⁴²Remember that a topicalized subject can appear either in the high Topic position (i.e., [Adjunct, CP]) or in the low Topic position (i.e., [Adjunct, IP]), as exemplified in (131). If it base-generates in the lower position, it cannot move into the matrix clause because of the PIC (Chomsky 2000).

⁴³Since Topic positions, regardless of whether they are high or low, are adjoined positions, a topicalized element cannot undergo feature checking with a Head. Therefore the subject that base-generates in the high Topic position cannot undergo wh-agreement with C⁰, which is shown by the ungrammaticality of the sentence (144).



Thus, given the proposed analysis, it is possible to explain the agreement patterns in clause-internal/long-distance subject extraction in Kinande.

As discussed above, it can be generalized from Kinande subject extraction that subject agreement and wh-agreement cannot co-occur if they are in the same clause. This generalization can be explained with the anti-locality condition on movement given that the position that triggers subject agreement and the one that triggers wh-agreement are within the same minimal domain. Thus, the anti-subject-agreement phenomenon in Kinande subject extraction is compatible with the proposed analysis.

To summarize this section, Kinande shows wh-agreement even in object extraction. I showed that the agreed-with subject is topicalized in Kinande, and argued that an object can pied-pipe its ϕ -features to the domain of CP because the agreed-with subject occupies an IP-adjoined position via Topicalization, so it is not an intervener for the object's pied-piping. Thus, the prediction (147) that is made from the proposed analysis is borne out also in Kinande.

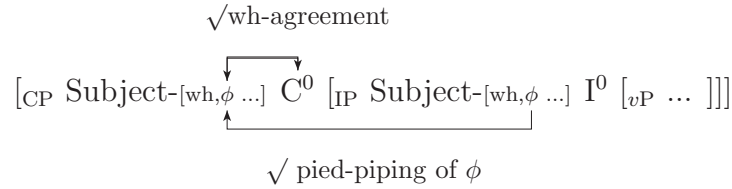
- (147) An object (or non-subject) can pied-pipe its ϕ -features to the domain of CP only if a subject (with ϕ -features) is not in an intervening position.

3.5 Conclusion

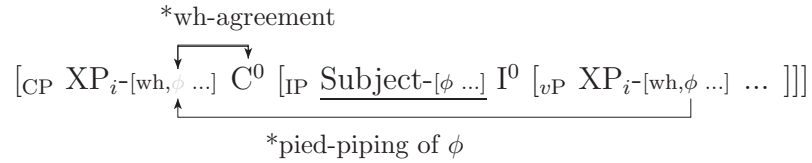
This chapter examined so-called wh-agreement phenomena in Bantu languages, Lubukusu, Kilega and Kinande. As we have seen in this chapter, Lubukusu shows the subject/object asymmetry; wh-agreement appears only in subject extraction. I showed that this asymmetry is straightforwardly derived by the theory of generalized pied-piping proposed in Chapter 2. That is, although a subject can pied-pipe its ϕ -features to [Spec CP] because there is no intervener, an object cannot because ϕ -features of the subject in [Spec, IP] are an intervener for the pied-piping. Thus, no wh-agreement occurs in object extraction.

(148) *Lubukusu*

a. *Subject extraction*



b. *Non-subject extraction*



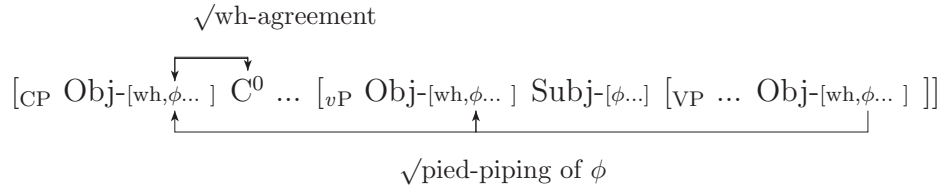
Differently from Lubukusu, wh-agreement appears both in subject extraction and non-subject extraction in Kilega and Kinande. I showed that what is predicted from the proposed analysis is borne out in the two languages. That is, given the

analysis, the prediction in (149) can be made.

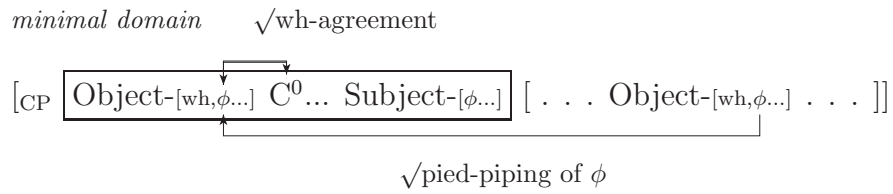
- (149) A subject is not in an intervening position when wh-agreement takes place in non-subject extraction.

I showed that a subject is not in an intervening position in non-subject extraction in the two languages as is predicted from the proposed analysis. In Kilega, a subject is in-situ position (i.e., [Spec, *v*P]) in non-subject extraction, so it is not an intervener for an object's pied-piping its ϕ -features to [Spec, CP]. In Kinande, a subject is in IP-adjoined position, which is within the same minimal domain as [Spec, CP], so it is also not an intervener for the pied-piping.

- (150) *Kilega non-subject extraction*



- (151) *Kinande non-subject extraction*



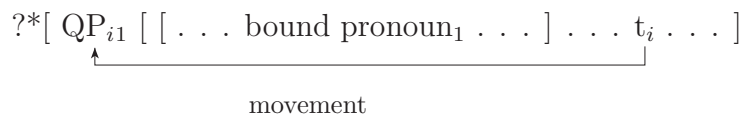
Thus, the patterns of wh-agreement in these Bantu languages can be accounted for with the theory on generalized pied-piping proposed in Chapter 2.

Chapter 4: Uniform Analysis for Binding: A Case Study of English

4.1 Overview

In English, when a quantificational element moves across a bound pronoun, a bound variable reading is impossible, which is called Crossover effect. In such a case, it is called Weak Crossover if a bound pronoun does not c-command the trace of the moved element, as illustrated in (1).¹

(1) *Weak Crossover*



Let us look at an example of Weak Crossover.

- (2) a. Who₁ loves his₁ mother? (\checkmark bound variable reading)
b. *?Who₁ does his₁ mother love? (*?bound variable reading)

The sentence (2-a) allows a bound variable reading, in which a person asked about by *who* and one referred to by “his” are the same. That is, the sentence can mean “who


¹For a discussion about difference between Crossover and Weak Crossover, see section 4.7

is a person such that he loves his own mother?”. Compared to sentences like (2-a), it has been observed that a bound variable reading is hard to obtain in sentences like (2-b) (Postal 1971, Wasow 1972, among others). That is, the sentence (2-b) cannot mean “who is a person such that his own mother loves him?”. Note that in the latter case, the quantificational element *who* moves from the object position to the front of the sentence across the subject containing the bound pronoun *his*.

- (3) *?_{[CP Who_{1i} does [_{IP} [his₁ mother] love t_i]}
- 
- A horizontal arrow points from the trace *t_i* in the object position to the quantifier *Who_{1i}* in the subject position.

The situation where a bound variable reading is impossible when a quantificational element moves (leftward) across a bound pronoun is called *Crossover*. Especially in cases like (3) in which a bound pronoun does not c-command the trace of a moved QP, such a situation is called *Weak Crossover (WCO)*.

Note that it is not the case that WCO always occurs whenever a quantificational element moves across a bound pronoun. As exemplified in (4-a), a bound variable reading is possible even though the wh-phrase *who* moves across the bound pronoun *his*.

- (4) a. Who₁ seems to his₁ mother to be clever. (✓ bound variable reading)
- b. Who_{1i} t_i seems to his₁ mother [t_i to be clever].
- 
- A horizontal arrow points from the trace *t_i* in the object position to the quantifier *Who_{1i}* in the subject position.

As discussed in detail in the next section, the grammatical difference between (2-b) and (4-a) has been generally explained using A/ \bar{A} -distinction in previous studies. However, there is a conceptual problem in such an analysis; it is totally unclear

what is the crucial factor that determines A/ \bar{A} -position/movement. In this chapter, I propose a new approach to licensing a bound variable without resorting to A/ \bar{A} -distinction. Assuming that only a copy with ϕ -features can be a binder, I propose that whether a moved element can be a binder at the landing site or not is dependent on whether it can carry its ϕ -features to the landing site, which is determined by the locality condition on pied-piping (Ura 2001) and the anti-locality condition on movement (Koizumi 1993 Koizumi 2000, Abels 2003ab, Bošković 2005, cf Fukui 1993, Saito and Murasugi 1999, Grohmann 2000) as I proposed in Chapter 2.

4.2 Previous Studies

In previous studies, various analyses were proposed to explain WCO phenomenon. In this section, we will look at some of them to discuss a problem of these analyses.

Firstly, Chomsky (1976) proposes to explain the ungrammaticality of WCO cases like (5) with the *Leftness Condition*, which is defined in (6).

- (5) a. *Who_{1i} did [the woman he₁ loved] betray t_i?
 b. *[The woman he₁ loved] betray someone₁. (a-b, Chomsky 1976:199-200)

- (6) *The Leftness Condition* (Chomsky 1976:201)

A variable cannot be the antecedent of a pronoun to its left.

Although Chomsky (1976) does not give a definition of a variable, this is implicitly assumed as a trace left by \bar{A} -movement in the study. Then, the ungrammaticality of the sentences in (5) is explained with the Leftness Condition (6) given the LF

representations as in (7).

- (7) a. for which person x_1 , [[the woman he_1 loved] betray x_1]
 b. for some x_1 , [[the woman he_1 loved] betray x_1]

That is, assuming that the sentences in (5) have the LF representations as in (7) respectively, they violate the Leftness Condition, which applies at LF, since a variable is co-indexed with a pronoun to its left in them.

As for the definition of a variable, Chomsky (1981), later, defined it as in the following.

- (8) α is a variable iff
- (i) $\alpha = [_{NP} e]$, and
 - (ii) α is in an A-position, and
 - (iii) there is a β that locally \bar{A} -binds α (Chomsky 1981:185)

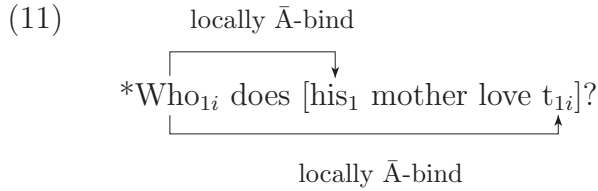
Koopman and Sportiche (1983) slightly modify the definition of a variable assuming that a pronoun can be a variable as in (9), and propose to explain WCO effects with the *Bijection Principle*, which is stated in (10).

- (9) α is a variable iff
- (i) α is empty or a pronoun , and
 - (ii) α is locally \bar{A} -bound, and
 - (iii) α is in an A-position (Koopman and Sportish 1983:143)

(10) *The Bijection Principle* (Koopman and Sportiche 1983:146)

Every variable is locally bound by one and only one \bar{A} -position, and every \bar{A} -position locally binds one and only one A-position.

Given Koopman and Sportiche's (1983) analysis, the unavailability of a bound variable reading of the sentence *Who₁ does his₁ mother love?* is explained as follows. As shown in (11), the \bar{A} -position that the operator *who* occupies locally binds the two variables in A-position, *his* and the trace of *who*, which violates the latter condition of the Bijection Principle.



Another major approach to explain WCO effects is using the notion of “binding” under the framework of the GB theory (Chomsky 1981). As for the availability of a bound variable reading, Reinhart 1983 made the following generalization.

(12) *Reinhart's (1983) generalization*

Pronoun binding can only take place from a c-commanding A-position.

On the basis of the generalization, the condition on a bound pronoun can be stated as follows.

(13) A bound pronoun must be A-bound.

- (14) α A-binds β iff
- (i) α and β are coindexed, and
 - (ii) α c-commands β , and
 - (iii) α is in A-position. (Chomsky 1981)

Given the condition (13), the sentence (2-b), *Who₁ does his₁ mother like?*, is ungrammatical because the binder *who* is in the \bar{A} -position, [Spec, CP], from which it cannot license the bound variable. On the other hand, in the sentences like (4-a), *Who₁ seems to his₁ mother to be clever?*, the trace of *who* is in the A-position, [Spec, IP], from which it can license a bound variable (or the binder *who* licenses the bound variable when it drops by [Spec, IP] on the way to the final landing site).

- (15) a. *A-bind
- $$\begin{array}{c} \downarrow \\ [\text{CP Who}_{1i} \text{ does } [\text{IP} [\text{his}_1 \text{ mother}] \text{ loves } t_i]] \end{array}$$
- b. $\sqrt{\text{A}}$ -bind
- $$\begin{array}{c} \downarrow \\ [\text{CP Who}_{1i} [\text{IP } t_i \text{ seems to his}_1 \text{ mother } [t_i \text{ to be clever}]]] \end{array}$$

Thus, the availability of a bound variable reading can be explained with the condition (13).

Note that such analyses developed during the GB era crucially rely on A/ \bar{A} -distinction. However, there are some theoretical problems in such analyses. Firstly, it is unclear what the definition of A-position is. Before the predicate-internal subject hypothesis (Koopman and Sportiche (1991), Fukui (1986, 1995), Fukui and Speas (1986), Kitagawa (1986), a.o) was introduced, Chomsky (1981) defines A-

position as a potential θ -position. After the hypothesis was introduced, in general, θ -positions, Case positions, and/or EPP positions (and IP-adjoined positions under some studies, particularly in the theory of scrambling) are counted as A-positions. Then, it is totally unclear what is the crucial factor that distinguishes A-positions from \bar{A} -positions. Because of this, it is also unclear why A/ \bar{A} -position is relevant to the possibility of binding. Therefore, even though A/ \bar{A} -distinction is useful for describing a certain distribution, an analysis resorting to A/ \bar{A} -distinction does not give a true explanation for why such a distribution exists, and should be given up. Note that the notion of A/ \bar{A} is not primitive in syntax; under the current framework, what is primitive is a feature. Therefore, the analysis to explain some syntactic phenomena should rely on the notion of features, but not A/ \bar{A} -distinction (or A/ \bar{A} -distinction should be clearly defined in terms of features). With regard to this point, I propose in the next section that the crucial factor that determines the possibility of binding is ϕ -features of nominal phrases involved in a binding relation.

Given the problems, some previous studies gave an alternative analysis to explain WCO effects (or binding phenomena generally) without resorting to A/ \bar{A} -distinction. One of them is Abe's (1993) pioneering study to derive binding phenomena mainly in English and Japanese without reference to A/ \bar{A} -distinction. Abe (1993) defines variable as in (16), with which WCO effects can be explained without using A/ \bar{A} -distinction.

(16) α is a variable iff

(i) α is a trace or a null operator bound by an operator, or

- (ii) α is bound by a variable

With the definition of variables, the pronoun *his* can be interpreted as variables in (17-a) and in (17-c), but not in (17-b). In (17-a) and (17-c), the trace of the moved wh-phrase *who*, which is a variable following the definition, binds the pronoun *his*. Therefore *his* is interpreted as a variable bound by *who*. In (17-b), on the other hand, the pronoun *his* cannot be interpreted as a variable because neither is it a trace itself nor is it bound by a trace/null operator bound by *who*.

- (17) a. $\left[\text{Who}_1 \underset{\text{variable}}{\underline{t}_1} \text{ loves } \underset{\text{variable}}{\underline{\text{his}}_1} \text{ mother} \right]$
- b. $*[\text{Who}_{1i} \text{ does his}_1 \text{ mother love } t_{1i}]$
- c. $\left[{}_{\text{CP}} \text{ Who}_{1i} \left[{}_{\text{IP}} \underset{\text{variable}}{\underline{t}_{1i}} \text{ seems to } \underset{\text{variable}}{\underline{\text{his}}_1} \text{ mother } [t_{1i} \text{ to be clever}] \right] \right]$

Thus, given the definition of a variable as in (16), it is possible to derive the acceptability/unacceptability of the sentences in (17). Note that Abe's analysis amounts to saying that in order to be interpreted as a bound variable, a pronoun must be bound by a trace of the operator (or a null operator). However, this condition is not a sufficient condition. Consider the unacceptable example in (18).

- (18) $*\text{Who}_1 \text{ does Mary thinks his}_1 \text{ mother loves?}$

As exemplified in (18), a long-distance wh-movement of an object wh-phrase, as well as clause-internal one, shows a WCO effect. Abe's (1993) analysis, however, wrongly

predicts that the sentence allows a bound variable reading (unless the intermediate trace of *who* in the embedded [Spec, CP] is obligatorily deleted at LF) since the pronoun *his* is bound by the intermediate trace, as illustrated in (19).

$$(19) \quad [\text{who}_{1i} \text{ does Mary thinks } [\text{CP } t_{1i} \text{ } [\text{IP } \text{his}_{1i} \text{ mother loves } t_1]]]$$

$\xrightarrow{\hspace{1.5cm}}$
 variable variable

Therefore, Abe’s (1993) condition is too weak to explain the ungrammaticality of sentences like (18). The unacceptable example in (18) suggests that the intermediate trace in the embedded [Spec, CP] is not available for licensing the pronoun to be interpreted as a variable. On the other hand, the acceptable sentences in (17) suggests that the trace of *who* is available for the license. Thus, we need a theory to determine which trace can be used for licensing a bound variable and which one cannot.

In this thesis, I adopt the copy theory of movement (Chomsky 1993, 1995), according to which a trace of a moved element is understood as a copy of the element. With the copy theory of movement, assuming that a pronoun can be interpreted as a bound variable if a copy of the pronoun is bound by a copy of its antecedent QP, I propose that only a copy with ϕ -features can be used for binding. Whether a copy of moved element has ϕ -features is determined by the analysis proposed in Section 2.2.² As we will see the details in the following sections, the proposed analysis can

²A similar analysis is given in Obata (2010). Although Obata (2010) does not discuss much about WCO effects, her study suggests that whether a moved QP can be a binder or not is determined by whether the QP has ϕ -features at the landing site and that is determined by how

distinguish the ungrammatical cases like (18) from the grammatical ones (17-a) and (17-c).

4.3 Pied-Piping of ϕ -features and WCO Effects in English

In order to derive a possibility of binding without A/ \bar{A} -distinction, I assume with Saito (2003) that only an element that has a certain feature can enter a binding relation. Specifically, I assume that the feature relevant to binding is ϕ -features, feature attraction takes place under the the feature inheritance system proposed in Chomsky (2007, 2008). Note, however, that the system gives rise to a counter-cyclic derivation and involves the extra notion “feature inheritance”, which is different from Agree(-ment). As far as empirical coverages are the same, it is preferable not to assume such an extra notion unless there is a strong conceptual motivation for it. For this reason, I do not adopt the framework proposed in Chomsky (2007, 2008).

Another approach to derive WCO effects without A/ \bar{A} -distinction is proposed in Saito (2003). Saito (2003) proposes that a chain is interpreted derivationally and binding facts in Japanese scrambling can be derived as a consequence of the derivational interpretation of chains. However, Saito’s (2003) framework assumes some extra features, D-feature, O-feature and P-feature, which are deleted at a non-selected position in the course of the derivation. These features are totally different from generally-assumed formal features, which must be deleted under agreement relation depending on their interpretability or strength. Therefore, if we adopt Saito’s (2003) framework, our feature system becomes more complex with one more kind of feature and one more device to treat them. Note that D-feature, O-Feature, and P-feature in Saito’s (2003) approach are used only for determining chain interpretation, and that even without these features, chain interpretation can be determined with existing devices such as deletion and some economy conditions (Chomsky 1995, Nunes 2004). Thus, it is preferable not to resort to such an additional feature.

In this chapter, I give an alternative analysis that does not assume these extra notions.

following Obata's (2010) proposal that *a category at an A-position is reanalyzed as a category bearing ϕ -features* (Obata 2010:53). Then, I propose (20).

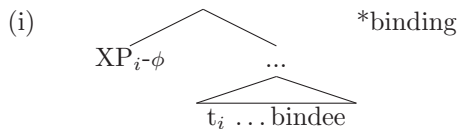
- (20) Only a copy with ϕ -features is available for binding.

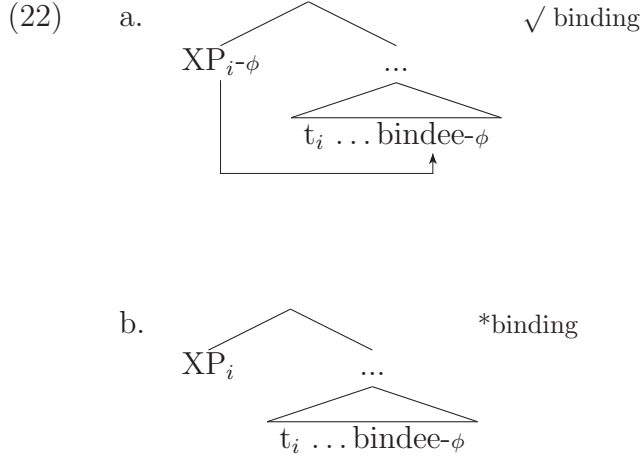
Given the proposal (20), the notion of *binding* is defined as follows.

- (21) α binds β only if
- (i) α is co-indexed with β , and
 - (ii) a copy of α c-commands a copy of β , and
 - (iii) the copies have ϕ -features

With the new definition of binding, whether a moved element can bind a bindee is determined by whether a copy of the moved element has ϕ -features at the landing site. That is, if a moved element has ϕ -features at the landing site, it can bind an element that it c-commands there, while if a moved element does not have the features at the landing site, it cannot bind any elements there.³

³Even if a moved element has ϕ -features at the landing site, it cannot bind a bindee if the bindee does not have ϕ -features, as illustrated in (i).





Then, whether a copy of the moved element has ϕ -features at a landing site is determined by whether the element carries (or pied-pipes) its ϕ -features to the landing site. As I propose in this thesis, how far an element carries its ϕ -features when it undergoes a movement is determined by the locality condition on generalized pied-piping (Ura 2001) and the anti-locality condition on movement (Koizumi 1993, 2000, Abels 2003a,b, Bošković 2005; cf. Fukui 1993, Saito and Murasugi 1999, Grohmann 2000), which are stated in (23) and (24) respectively.

(23) *Locality Condition on Generalized Pied-Piping*

A formal feature cannot be pied-piped as a free rider if there is an intervening matching feature.

(24) *Anti-locality Condition on Movement*

Movement within a minimal domain is disallowed.

In the following subsections, we will look at how the presence/absence of WCO effects is explained under the analysis developed here.

4.3.1 WCO effects in object questions

Let us, first, look at how the ungrammaticality of a WCO case can be explained under the proposed analysis. Consider a derivation of the sentence (25). A possible derivation of the sentence is illustrated in (26).

(25) *?Who₁ does his₁ mother love? (*?bound variable reading)

- (26) a. [_{vP} who- ϕ [[his mother]- ϕ v⁰ [_{VP} love who- ϕ]]]
- b. [_{IP} [his mother]- ϕ I⁰ [_{vP} who- ϕ [[his mother]- ϕ v⁰ [_{VP} love who- ϕ]]]]]
- c. [_{CP} who- ϕ C⁰ [_{IP} [his mother]- ϕ I⁰ [_{vP} who- ϕ [[his mother]- ϕ v⁰ [_{VP} love
who- ϕ]]]]]]]
- ↑
*pied-piping of ϕ

First, after the external argument was introduced, the wh-object *who* moved to *vP*-edge position, as in (26-a). Note that because *who* in the *vP*-edge position and *his mother* in [Spec, *vP*] are within the same minimal domain, *his mother* is not an intervener for *who*'s pied-piping its ϕ -features to the landing site. After that, the subject *his mother* moves to [Spec, IP] to satisfy an EPP requirement as in (26-b). Then, *who* in the *vP*-edge moves to [Spec, CP] as in (26-c). In this case, ϕ -features of the subject in the [Spec, IP] are an intervener for *who*'s pied-piping its ϕ -features to the [Spec, CP]. Therefore, the copy of *who* in the [Spec, CP] cannot retain its

ϕ -features.^{4,5}

Then, with the proposal (20), which states that only a copy with ϕ -features can be a binder, the copy of *who* in the [Spec, CP] in (26-c) cannot be used as a binder of the bound variable *his*, as illustrated in (27), in which a copy unavailable

⁴As discussed in Section 2.2, if *who* in the *vP*-edge position moves to an IP-adjoined position, it can retain its ϕ -features at the landing site as in (i) because [Spec, IP] and an IP-adjoined position are equidistant from the *vP*-edge.

- (i) [IP who- ϕ [IP [his mother]- ϕ I⁰ [_{vP} who- ϕ [[his mother]- ϕ v⁰ [_{VP} love who- ϕ]]]]]

Note, however, that in this case, *who* in the IP-adjoined position cannot move to an immediately higher [Spec, CP] because of the anti-locality condition on movement; an IP-adjoined position and a Spec of CP, whose head C⁰ is sister to the IP, are in the same minimal domain, and therefore a movement from the former to the later is disallowed.

- (ii)

⁵As pointed out by Bresnan and Grimshaw (1978), free relatives induce number agreement, which indicates that the free relative noun *whatever books* has ϕ -features.

- (i) a. *Whatever books she has isn't marked up with her notes.

- b. Whatever books she has aren't marked up with her notes.

(a-b, Bresnan and Grimshaw 1978:39)

I assume with Bresnan and Grimshaw (1978), Larson (1987), Citko (2002) a.o. that a free relative (pro)noun is base-generated as a relative Head noun as illustrated in (iia), rather than it base-generates inside a free relative clause and undergoes movement to [Spec, CP] (or a position that is sister to \bar{C}) (Groos 1981, Caponigro 2003, Donati 2006 a.o.) as illustrated in (iib).

- (ii) a. [_{DP} whatever books_i [_{CP} John read e_i]]

- b. [_{DP} ([_{CP}) Whatever books_i [_{C'} John read t_i](₎]

for binding is ash-colored.

$$(27) \quad [_{CP} \text{ who } C^0 [_{TP} [\text{his mother}]_{-\phi} T^0 [_{vP} \text{ who}_{-\phi} [[\text{his mother}]_{-\phi} v^0 [_{VP} \text{ love who}_{-\phi}]]]]]]$$

Now, given the licensing condition on bound variable in (28) and the definition of *binding* proposed in this chapter as in (21), the bound variable *his* in (27) could be One piece of evidence for the analysis in (iia) is that free relatives, differently from wh-interrogatives, do not show obligatory reconstruction effects with respect to Condition C.

- (iii) a. *Which pictures of Gretel₁ does she₁ display prominently?
 b. We will comment on whichever pictures of Hansel₁ he₁ displays prominently.
 (a-b, Citko 2002:508)

The grammaticality of (iiib) can be explained given that the relative nouns *pictures of Hansel* base-generates as a Head noun as in (iia).

Note that free relatives show island effects as demonstrated in (iv), which indicates that movement is involved in the constructions.

- (iv) a. *John plays whatever₁ he hears the claim that Mary likes e₁.
 b. *John plays whatever₁ he wonders why Mary plays e₁.
 c. *John did whatever₁ Mary left because John did e₁. (a-c, Citko 2008:928)

Given these properties, I propose that free relatives involves a null operator predication: a null operator moves to [Spec, CP] to cause predication, by which a relative noun base-generates a position c-commanding the relative clause.

$$(v) \quad [_{DP} \text{ whatever books}_i [_{CP} \text{ Op}_i \text{ John read t}_i]]$$

I thank Omer Preminger (p.c.) for bringing my attention to this issue.

licensed if a copy of the subject *his mother* could be interpreted at the [Spec, *v*P], whereas it cannot be licensed if the copy of subject must be interpreted in [Spec, IP].

- (28) A pronoun P is construed as a variable bound by a quantifier Q only if Q binds P at LF. (Lasnik and Stowell 1991:688)

That is, as illustrated in (29-a), if the copy of *his mother* in [Spec, *v*P] could be available for interpretation, it could be licensed by the copy of *who* in the *v*P-edge position since the latter c-commands the former. Then, it is wrongly predicted that a bound variable reading is available for the English sentence (25). If, on the other hand, the copy of *his mother* in [Spec, *v*P] is uninterpretable and only the copy in [Spec, IP] is interpretable as in (29-b), the bound variable *his* cannot be licensed because no copies of the licenser *who* available for binding c-command a copy of the bound pronoun *his*. Then, it is correctly predicted that the sentence (25) does not allow a bound variable reading.

- (29) a. $[_{CP} \text{ who } C^0 [_{IP} [\text{his mother}]_{-\phi} I^0 [_{vP} \text{ who}_{-\phi} \overbrace{[[\text{his mother}]_{-\phi}]]^{v^0} [_{VP} \text{ love who}_{-\phi}]]]]$ (\checkmark bound variable reading)
- b. $[_{CP} \text{ who } C^0 [_{IP} [\text{his mother}]_{-\phi} I^0 [_{vP} \text{ who}_{-\phi} [[\text{his mother}]_{-\phi}]] v^0 [_{VP} \text{ love who}_{-\phi}]]]]$ (*bound variable reading)

In what follows, I will show that a possible structure for the English sentence *who does his mother love* is as in (29-b) but not as in (29-a), which is derived from Boeckx's (2001) proposal that Case-checking makes an element as interpretable. This is why the sentence (25) is unacceptable with a bound variable reading.

As for the question whether a copy of the subject in [Spec, *v*P] is interpretable or not in English, previous studies observed absence of reconstruction effects of A-moving elements (Chomsky 1993; 1995, Lasnik 1998a; 1998b; 1999, and Fox 1999 among others). First, some A-moving quantifiers cannot have narrow scope under negation that c-commands its pre-movement position. Let us look at the examples in (30)⁶

⁶Contrasted to the sentence (30-b), a universal quantifier that is an ECM subject can take scope under the clausal negation in the ECM clause if the ECM subject appears after *out* (although some speakers do not allow the sequence *make out X*) .

- (i) The mathematician made out every even number not to be the sum of two primes.
($\neg > \forall$) (Lasnik 2003:122)

Lasnik (1998a, 1999, 2003) further observes that there are other contrasts between *make out X* and *make X out* in NPI license and binding.

- (ii) a. The lawyer made no witnesses out to be idiots during any of the trials.
 b. ?*The lawyer made out no witnesses to be idiots during any of the trials.
- (iii) a. The DA made the defendants out to be guilty during each other's trials.
 b. ?*The DA made out the defendants to be guilty during each other's trials.

These contrasts suggest that an ECM subject undergoes raising to the matrix clause when it appears before *out*. Let us, now, look at the following examples.

- (30) a. Everyone seems not to have left. ($*\neg > \forall$) (Chomsky 1995:327)
- b. The mathematician made every even number out not to be the sum of two primes. ($*\neg > \forall$) (Lasnik 2003:148)
- c. Many boys didn't come. ($*\neg > \text{many}$) (Boeckx 2001:538)

In the above examples, the quantificational element cannot take scope under negation. That is, the sentences do not have the following interpretations.

- (31) a. It seems that not everyone has left.
- b. The mathematician made out not every even number to be the sum of two primes.
- c. It is not (the case) that many boys came.

The unavailability of the narrow scope reading of the quantificational element that undergoes A-movement suggests that the A-moving element cannot reconstruct to its trace position. That is, if it can undergo reconstruct to its trace position, each of

-
- (iv) a. The DA proved [no one to have been at the scene of the crime] during any of the trials.
- b. The DA proved [two men to have been at the scene of the crime] during each other's trials. (a-b, Lasnik 2003:145)
- c. I expect everyone not to be there yet. ($\neg > \forall$) (Chomsky 1995:327)

The acceptability of the sentences (iva-b) suggests that an ECM subject can move into the matrix clause, as argued in Lasnik and Saito (1991), and the availability of the narrow scope reading of the ECM subject in (iv-c) suggests that such a raising of an ECM subject is optional, as argued in Lasnik (1998a, 1999).

the sentences in (30) can have the structure as in (38-c), with which the A-movement element is able to take scope under the negation. This is, however, contrary to fact.

- (32) a. *[everyone seems [not everyone to have left]]
 b. *[the mathematician made every even number out [not every even number to be the sum of two primes]]
 c. *[many boys didn't many boys come].

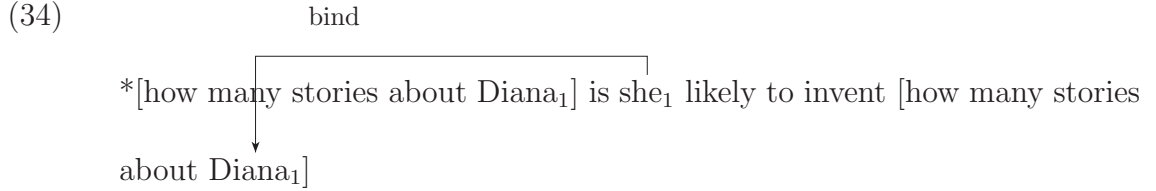
Given the absence of the narrow scope reading of A-moving elements, Chomsky (1993, 1995) argues that ‘*reconstruction in the A-chain does not take place* (Chomsky 1995:327).⁷

Secondly, Fox (1999) points out that standard A-movement, differently from \bar{A} -movement, bleeds condition C violation caused by obligatory reconstruction.

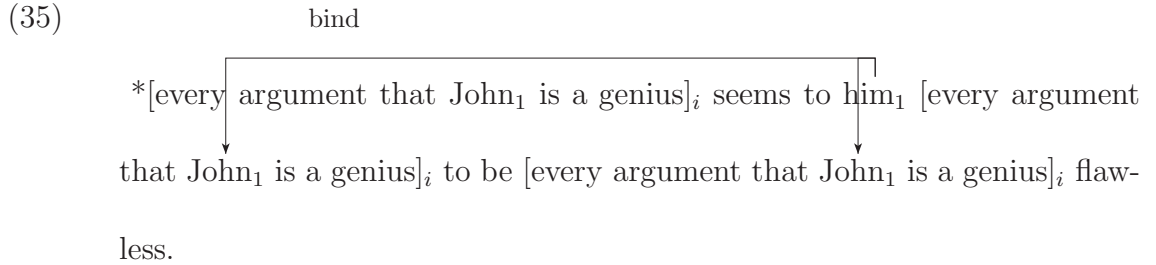
- (33) a. *[How many stories about Diana₁] is she₁ likely to invent t_i?
 (Heycock 1995:558)
 b. [Every argument that John₁ is a genius]_i seems to him₁ t_i to be flawless.
 (Fox 1999:192)

⁷“Reconstruction” means a syntactic process by which an A-moved element is interpreted at its trace position at LF as proposed in Hornstein (1995). In this thesis I call it *syntactic reconstruction*. Differently from Chomsky (1993, 1995), Lasnik (1998a, 1998b, 1999) assumes that syntactic reconstruction in the A-chain is potentially possible as well as in the case of \bar{A} -chain and proposes that A-movement does not leave a copy or trace so that the absence of reconstruction effects in the A-chain is derived.

In the unacceptable sentence (33-a), the moved phrase that contains the R-expression *Diana* undergoes \bar{A} -movement across the co-indexed pronoun *she*. In the acceptable sentence (33-b), on the other hand, the moved phrase that contains the R-expression *John* undergoes A-movement. The ungrammaticality of the former case is attributed to a Condition C violation. That is, as illustrated in (34), there is a copy of the moved phrase in the base-generation position, due to which *Diana* is bound by *she* to produce a Condition C violation.⁸



In the case of (33-b), if there is a copy of the moved phrase in its base-generated position and/or in the embedded [Spec, IP], the sentence should be ungrammatical because of a Condition C violation as well as in the case of (34).



⁸For the specific analysis for Condition C effects under the present analysis, see Section 2.7.

The acceptable sentence (33-b) shows that there is no Condition C violation. if Condition C applies at LF, the absence of a Condition C violation in (33-b) suggests that there is no copy of the A-moving element in its trace positions available at LF. To derive the lack of A-reconstruction effects, Fox (1999) proposes that A-movement leaves a simple trace but not a copy.

As we have seen above, A-moving elements usually do not show reconstruction effects. Given this fact, the question arises as why that is so. For the answer of this question, Boeckx (2001) proposes that only a copy whose Case is checked and deleted can be used for interpretation.⁹

(36) Case checking renders an element as interpretable. (Boeckx 2001:518)

The proposal (36) is theoretically justified if checking of a feature of a link does not affect the same feature of the other links of a chain, contrary to the claim made in Chomsky (1995). Chomsky (1995) assumes that if a feature of a chain link is checked/deleted, the corresponding feature of the other links of the same chain is also checked/deleted. By contrast, Nunes (2004) proposes that a feature of the other links of a chain is not affected when the feature of a link of the chain is affected. Given Nunes' (2004) proposal, which I adopt in this thesis, when an element XP undergoes movement and its feature α is checked at the position, the feature α of a copy in the original position remains unchecked.

⁹Fox (1999) also suggests in footnote that the stipulation that A-movement cannot leave a copy could be derived from an assumption that copies must get Case.

$$(37) \quad [\text{XP} \overset{\text{Y}^0}{\downarrow} \dots [\dots \text{XP}_{-\alpha} \dots]]$$

Thus, copies of a moved element XP that are made before its Case-feature is checked have uninterpretable Case-feature, and such a copy with an uninterpretable feature is an illegitimate LF object and cannot be interpreted at LF.

Given Boeckx's proposal (36), it is possible to explain why an A-moved subject in [Spec, IP] does not exhibit reconstruction effects under the analysis proposed in this thesis. Following my proposal on how feature checking takes place as discussed in Section 2.4.2, Case-feature of a subject must be checked at [Spec, IP] if the subject satisfies the EPP requirement of the I. Thus, the raising subject cannot take scope under the negation in the embedded clause in (30-a), repeated in (38-a), because the copy of the subject in the embedded clause has unchecked Case-feature, so it is not interpretable at LF, as illustrated in (38-c).

- (38) a. Everyone seems not to have left. ($*\neg > \forall$) (Chomsky 1995:327)
- b. $\overset{\text{checking}}{\downarrow}$
 $[\text{IP everyone-Case I}^0\text{-EPP seems [not everyone-Case to have left]]$
- c. LF: $[\text{IP everyone-Case seems [not everyone-Case to have left]]$

In the structure (38-c), the raising subject can be interpreted at the matrix [Spec, IP] but cannot be in the embedded clause, so it must take scope over the negation.

Note that as discussed in May (1977, 1985), Chomsky (1993, 1995b), Lasnik (1998b,a, 1999) and Boeckx (2001) among others, there are some cases where a quantificational subject is interpreted in a lower position than its surface position,

as exemplified in (39).

- (39) a. Everyone will not come. ($\neg > \forall$) (Zubizarreta 1982:58)
 b. Some politician is likely to address John's constituency. (likely $> \exists$)
 c. Many people were thought to have sold IBM shares. (thought $>$ many)
 (c-d, May 1977:188)

I will discuss these apparent reconstruction effects in Section 4.9 in detail. As discussed there, I assume, with Chomsky (1995) and Fox (1999), that the apparent reconstruction effects are not due to syntactic reconstruction, but due to Quantifier Lowering (QL) (May 1977, 1985).¹⁰ That is, a certain kind of quantificational element can undergo lowering to some position (but not to its trace position) to take an appropriate scope interpretation, as illustrated in the following.

- (40) a. SS: $[[\text{some politician}]_i \text{ is likely } [t_i \text{ to address John's constituency}]]$
 b. LF: $[\text{is likely } [[\text{some politician}]_i [t_i \text{ to address John's constituency}]]$
 $\quad \quad \quad \underbrace{\hspace{10em}}_{\text{QL}} \uparrow$

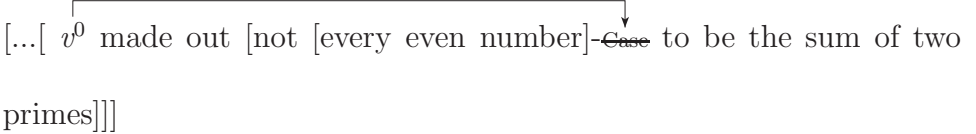
In the case of the ECM constructions, there is a difference in scope interpretation between the raised ECM subject and the non-raised one; the ECM subject that undergoes overt raising cannot have a narrow scope reading with regard to the negation in the embedded clause, whereas the ECM subject that does not undergo

¹⁰Lasnik (1998a, 1998b, 1999) argues that apparent reconstruction effects of the A-chain is due to a semantic property of indefinites, i.e., their specific/non-specific ambiguity.

overt raising can.¹¹

- (41) a. The mathematician made out every even number not to be the sum of two primes. ($\neg > \forall$)
- b. The mathematician made every even number out not to be the sum of two primes. ($*\neg > \forall$) (a-b, Lasnik 2003:150)

As discussed in Section 2.4.2, in this thesis I propose that feature checking takes place under a c-command relation between a checker and a checkee as proposed in the *Probe-Goal* Agree system in Chomsky (2000, 2001, a.o.). Thus, in the sentence (41-a), the ECM subject gets its Case-feature checked in the embedded clause. Therefore, the ECM subject can be interpreted in the embedded clause to take narrow scope under negation, as illustrated in (42).

- (42) a. 
- b. LF: [...[v^0 made out [not [every even number] ~~Case~~ to be the sum of two

¹¹In the example (41-a), *every* can take scope under the negation. As discussed before, I assume that such a reading is available due to QL that takes at LF. Note, however, that the example (41-b) does not allow the reading where Neg scope over *every*. Then a question arises as why QL cannot happen in (41-b). For the answer of this question, I assume that QL, as well as QR, is clause-bounded; in (41-b), the QP in the matrix clause cannot undergo QL into the embedded clause. Given the assumption, the narrow scope reading of the raising subject in (39-b) is available because the subject undergoes QL to a position in the matrix clause that the predicate *seem* c-commands.

primes]]]

In raising cases like (41-b), I assume that the raising of the ECM subject is triggered by an (optional) EPP features of v^0 . As I proposed in Section 2.4.2, when an element α that has a checking relation with a Head β satisfies the EPP requirement of β , checking between α and β must be done after α moves to [Spec, β P]. Provided the proposal, when the matrix v^0 has an EPP-feature, an ECM subject moves to the matrix [Spec, v P] and its Case is checked at that position. Therefore, the copy of the subject in the embedded clause has an uninterpretable Case-feature, so it cannot be interpreted in the position.

- (43) a. checking
 $\xrightarrow{\quad\quad\quad}$
[... [every even number]-~~Case~~ v^0 -~~EPP~~ made out [not [every even number]-
Case to be the sum of two primes]]
- b. LF: [... [made [every even number]-~~Case~~ out [not every even number-Case
to be the sum of two primes]]]

That is why the sentence (41-b) does not have an interpretation where the ECM subject take narrow scope under negation.

As we have seen so far, given Boeckx's (2001) proposal (36), the absence of reconstruction effects in the A-chain in many cases can be explained. It follows from the present analysis that the copy of the A-moved subject in [Spec, v P] cannot be interpretable at LF.

Let us, now, return to the analysis of WCO effects. Provided that the copy of the subject in [Spec, *v*P] is uninterpretable at LF, it is possible to explain the ungrammaticality of the WCO sentence (44-a). Reconsider the structure of the sentence after syntactic operations as in (44-b), and the one presenting which copy can be used for binding/interpretation as in (44-c).

- (44) a. *?Who₁ does his₁ mother love? (*?bound variable reading)
- b. [CP ~~who-Case~~ C⁰ [IP [his mother]-~~φ/Case~~ I⁰ [*v*P ~~who-φ/Case~~ [[his mother]-
~~φ/Case~~ v⁰ [*v*P love ~~who-φ/Case~~]]]]]]
- c. LF: [CP ~~who-Case~~ C⁰ [IP [his mother]-~~φ/Case~~ I⁰ [*v*P ~~who-φ/Case~~ [[his mother]-
~~φ/Case~~ v⁰ [*v*P love ~~who-φ/Case~~]]]]]]

As in our conclusion, the copy of the subject in [Spec, *v*P] is ininterpretable. Moreover, as we saw before, the *wh*-object *who* cannot pied-pipe its ϕ -features to [Spec, CP] because of the intervening subject in [Spec, IP], so the copy of it in [Spec, CP] does not retain its ϕ -features. Then, given the proposed definition of binding (45), the copy of *who* in [Spec, CP] cannot be a binder. Therefore, the bound variable *his* is not bound since no copies of *who*, which is a binder of the bound pronoun *his*, c-commands a copy of *his* in the structure (44-c).¹²

¹²Under the present analysis, one may predict that if a subject can get Case not in [Spec, IP], but within a *v*P in a certain construction, the sentence may allow a bound variable reading. One possible case where a thematic subject can get a Case within a *v*P is so-called *there*-constructions, which is exemplified in (i).

- (i) There was a picture of him in the artist's attic.

(45) α binds β only if

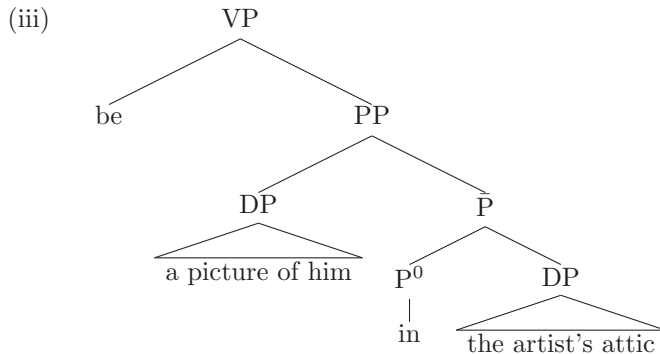
(i) α is co-indexed with β , and

(ii) a copy of α c-commands a copy of β , and

In the example (i), the thematic subject *a picture of him* appears post-verbally. This suggests that the subject gets Case in the post-verbal position, either via Agree or by being assigned a partitive Case (Belletti 1988). Note, however, as David Adger (p.c.) pointed out to me, that WCO effects are observed in *there*-constructions, as shown by the following sentence in which a bound variable reading is impossible.

(ii) *Whose_{*i*} attic was there a picture of him_{*i*} in?

To derive the ungrammaticality of (ii), I assume, along the lines of Stowell (1981), that the associate DP *a picture of him* in (ii) base-generates in [Spec, PP], in which position it receives a θ -role from the preposition *in*.



Given the structure (iii) (and assuming that (iii) is the only possible structure of the sentence (ii)), it is possible to explain the ungrammaticality of the sentence under the present analysis. As illustrated in (iv-a), the wh-phrase *whose attic* cannot move from [Complement, PP] to an adjoined-position to the PP since the two positions are within the same minimal domain of P^0 , so the anti-locality condition on movement prohibits the movement. Therefore, it must move to a position higher than the PP, but such a movement cannot pied-pipe the ϕ -features to the landing site because ϕ -features of the associate DP *a picture of him* in [Spec, PP] are an intervener for it.

(iii) the copies have ϕ -features

Therefore, the bound pronoun is not licensed, and the sentence is ungrammatical.¹³

Thus, given the proposed analysis, it is possible to account for the ungrammaticality of WCO effects when a quantificational object undergoes a movement across a bound variable inside a subject. Note that this analysis does not resort to A/ \bar{A} -distinction at all. Under the analysis, whether a moved quantificational object can license a bound variable inside a subject is determined by (i) whether the object can carry its ϕ -features to a position that c-commands a copy of the subject and (ii) whether Case of the copy of the subject is already checked. Thus, instead of relying on A/ \bar{A} -distinction, this analysis uses just ϕ -features and Case.

Thus, there is no copy of the binder *whose attic* available for binding in a position c-commanding a copy of the bound pronoun *him*, so *whose attic* cannot bind *him* and the bound variable reading is unavailable.

- (iv) a. [PP whose attic [PP [a picture of him] [P' in [whose attic]]]
- ↑
*movement
- b. [_{αP} whose attic-wh, ϕ , ... [PP a picture of him- ϕ [P' in [whose attic-wh, ϕ]]]
- ↑
*pied-piping of ϕ
- c. LF: [_{CP} whose attic-wh,~~Case~~ ... [PP [a picture of him]- ϕ ,~~Case~~ [P' in [whose attic-wh, ϕ ,~~Case~~]]]

¹³As discussed in Chapter 5, some languages do not show WCO effects when a quantificational object moves across a non-c-commanding bound variable. I will discuss the cross-linguistic variation in WCO effects in that chapter.

4.3.2 WCO effects in long-distance (subject) extraction

In the previous subsection, we looked at WCO effects in mono-clausal wh-questions. Let us, in this subsection, look at cases where a wh-phrase undergoes a long-distance movement (i.e., movement across a clause boundary). As exemplified in (46), a wh-subject moved long-distantly cannot bind a bound pronoun in the matrix clause.¹⁴

- (46) a. *Who_{1*i*} did John tell his₁ mother (that apparently) t_{*i*} was a genius?
 b. *Who_{1*i*} dis his₁ mother think t_{*i*} was a genius?

Under the current analysis, in both of the cases in (46), the subject wh-phrase *who* can carry its ϕ -features to the embedded [Spec, CP], since no intervener is there.

- (47) [CP who_{1- ϕ , Case} [IP who_{1- ϕ , Case} was a genius]]

In the subsequent derivations, however, it cannot pied-pipe the features to a position c-commanding a copy of the bound pronoun in the matrix clause: Assuming the structure for the double object constructions as in (48-a), the matrix goal DP *his mother* in the matrix [Spec, VP] prevents *who*'s pied-piping of its ϕ -features to the

¹⁴As shown by the following examples, subject extraction out of the embedded clause in cases like (46) is possible.

- (i) a. Who did Louise tell you t_{*i*} was mean to her? (Stowell 1981:413)
 b. Who does John think t_{*i*} is a genius?

Therefore, the ungrammaticality of the sentences in (46) is due to WCO effects.

matrix *vP*-edge position in (46-a). In (46-b), as well as in the case of mono-clausal object wh-questions, the matrix subject is an intervener for *who*’s pied-piping of its ϕ -features to the matrix [Spec, CP].¹⁵

- (48) a. $[_{vP} \text{ who}_{1-\phi, \text{Case}} \text{ John}_{-\phi, \text{Case}} [_{VP} \text{ his}_1 \text{ mother}]_{-\phi, \text{Case}} \text{ tell } [_{CP} \text{ who}_{1-\phi, \text{Case}} [_{IP} \text{ who}_{1-\phi, \text{Case}} \text{ was a genius}]]]]$ *pied-piping of ϕ
- b. $[_{CP} \text{ who}_{1-\phi, \text{Case}} [_{IP} \text{ his mother}]_{-\phi, \text{Case}} [_{vP} \text{ who}_{1-\phi, \text{Case}} [_{IP} \text{ his}_1 \text{ mother}]_{-\phi, \text{Case}} \text{ think } [_{CP} \text{ who}_{1-\phi, \text{Case}} [_{IP} \text{ who}_{1-\phi, \text{Case}} \text{ was a genius}]]]]]]$ *pied-piping of ϕ

Thus, in both cases, there is no copy of the wh-phrase *who* that has ϕ -features and c-commands a copy of the bound pronoun in the LF-structures, and therefore a bound variable reading is impossible.

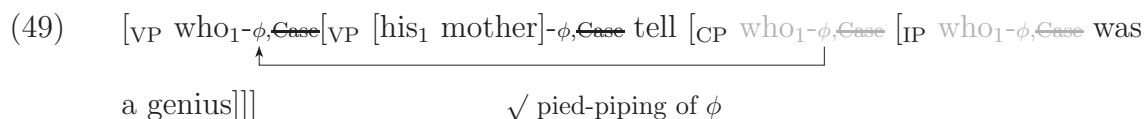
¹⁵Ura (2001) suggests, in appendix, that *intervenor* can be defined in terms of *domination* as well as *c-command*, as in the following definition.

- (i) γ intervenes between α and β iff α c-commands γ and γ c-commands or dominates β , and γ and α are not equidistant from β or γ and β are not equidistant from α .

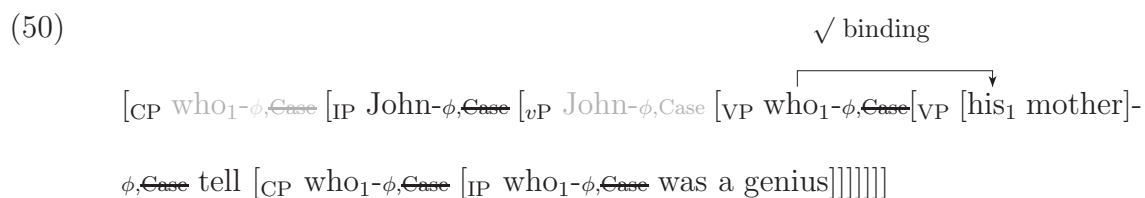
Provided the definition of interveners (i) and the assumption that CPs have ϕ -features, another possibility is that an XP cannot pied-pipe its ϕ -features to the matrix clause out of the embedded clause because the ϕ -features of the embedded CP are interveners for the pied-piping.

- (ii) $[_{vP} \text{ who}_{1-\phi, \text{Case}} \dots [_{VP} \dots V [_{CP-\phi} \text{ who}_{1-\phi, \text{Case}} [_{IP} \text{ who}_{1-\phi, \text{Case}} \text{ was a genius}]]]]$ *pied-piping of ϕ

In the case of (46-a), one may argue that *who* can retain its ϕ -features to a position c-commanding a copy of *his* if it adjoins to the matrix VP.



As illustrated above, if *who* moves to the VP-adjoined position, it can pied-pipe its ϕ -features to the landing site because the VP-adjoined position is equidistant to the [Spec, VP], so the copy of *his mother* in that position is not an intervenor. Then, if *who* moves to the matrix [Spec, CP] from the adjoined position, the LF structure would be as shown in (50), in which the copy of *who* in the VP-adjoined position, which can be a binder, c-commands the copy of *his* in the [Spec, VP].

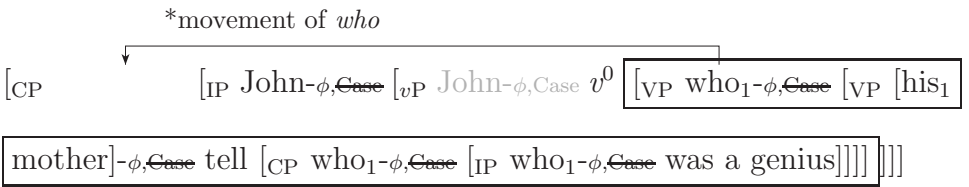
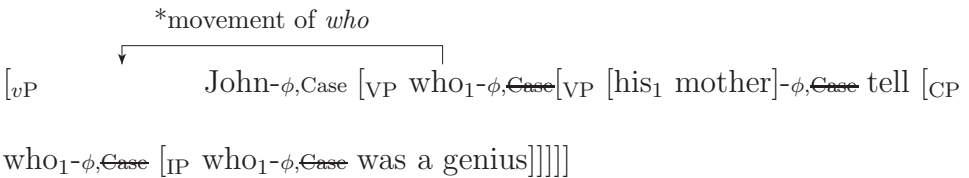


Thus, if VP-adjunction is allowed and *who* can move from the VP-adjoined position to [Spec, CP], it is predicted that a bound variable reading is possible in the sentence (46-a), contrary to fact. Notice, however, that VP-adjunction on the way to [Spec, CP] is prohibited in (46-a) given the Phase-Impenetrability Condition (PIC) proposed by Chomsky (2000) and the assumption that the *v*P is a phase.

(51) *The Phase-Impenetrability Condition (PIC)* (Chomsky 2000)

In phase α with head H, the domain of H is not accessible to operations outside α , only H and its edge are accessible to such operations.

That is, with the PIC in (51), once the embedded vP is built, movement out of its complement VP is disallowed, as illustrated in (52-a).¹⁶ Therefore, in order to move to the matrix [Spec, CP] without violating the PIC, the wh-phrase *who* has to stop by the vP -edge position. However, because of the anti-locality condition that prohibits a movement within the same minimal domain, *who* in the VP-adjoined position cannot move to the vP -edge position because the former position and the latter position are within the same minimal domain.

- (52) a. 
- b. 

¹⁶Chomsky (2001) revised the definition of the PIC so that the domain of a phase Head is accessible to operation outside the phase until merger of the next higher phase Head. With this definition and the assumption that merger of H^0 and movement to [Spec, HP] can take place simultaneously, movement of *who* out of the VP to [Spec, CP] is possible, which makes it difficult to explain the ungrammaticality of sentences like (46) under the current analysis. For this reason, I adopt the definition given in Chomsky (2000) rather than the one given in Chomsky (2001).

Thus, in the derivation of the sentence (46-a), the wh-phrase *who* has to move from the embedded CP-edge position to the matrix *v*P-position without adjoining to VP, as illustrated in (48-a). Then, the movement cannot pied-pipe the ϕ -features to the *v*P-edge, and therefore the bound pronoun is not licensed, yielding the unacceptability of the sentence.

Under this analysis, the unavailability of VP-adjunction (and the presence of WCO consequently) is due to the PIC and the *v*P that is a phase. Then, one may predict that WCO effects can be exempted if a verbal phrase in the matrix clause is not phase. The prediction, however, is not borne out. Consider the following examples.¹⁷

- (53) a. *Who_{1*i*} was it said to his₁ mother t_{1*i*} was a genius?
 b. *Who_{1*i*} does it seems to his₁ mother (that unfortunately) is an idiot?

In the unacceptable sentences (53), the matrix predicate is a raising predicate or a passivized verb. According to Chomsky (2000, 2001), these predicates do not form a phase. In such a case, an element inside the complement VP is accessible from outside of the verbal domain.

- (54) $vP \neq \text{Phase}$
- $$\begin{array}{c} [\dots XP \dots [_{vP} [_{VP} XP \dots]] \\ \quad \uparrow \quad \quad \quad \downarrow \\ \quad \quad \quad \sqrt{\text{movement}} \end{array}$$

¹⁷I thank Omer Preminger (p.c.) for bringing my attention to these examples.

Therefore, if the embedded subject *who* adjoins to the matrix VP in the derivation of the sentence (53-a), it can move from the VP-adjoined position to the matrix [Spec, CP] (although it cannot pied-pipe its ϕ -features to the landing site because of the intervening subject in [Spec, IP]). Then, as shown in the LF rstructure in (55-b), the copy of *who* in the VP-adjoined position c-commands the copy of *his* in the [Spec, VP], by which *who* binds the bound variable *his*.

- (55) a. $\left[\text{CP } \text{who}_{01-\text{Case}} \text{C}^0\text{-I}^0\text{-was } \left[\text{IP } \text{it-}\phi, \text{Case } \left[\text{vP } \left[\text{VP } \text{who}_{01-\phi, \text{Case}} \left[\text{VP } \left[\text{to his}_1 \text{ mother} \right] \right] \right] \right] \right] \right]$
 \uparrow
said $\left[\text{CP } \text{who}_{01-\phi, \text{Case}} \left[\text{IP } \text{who}_{01-\phi, \text{Case}} \text{was a genius} \right] \right]$
- b. $\sqrt{\text{binding}}$
 $\left[\text{CP } \text{who}_{01-\text{Case}} \text{C}^0\text{-I}^0\text{-was } \left[\text{IP } \text{it-}\phi, \text{Case } \left[\text{vP } \left[\text{VP } \text{who}_{01-\phi, \text{Case}} \left[\text{VP } \left[\text{to his}_1 \text{ mother} \right] \right] \right] \right] \right] \right]$
said $\left[\text{CP } \text{who}_{01-\phi, \text{Case}} \left[\text{IP } \text{who}_{01-\phi, \text{Case}} \text{was a genius} \right] \right]$

Thus, under the proposed analysis, it is incorrectly predicted that the sentences (53) allow a bound variable reading. Therefore, the unacceptability of the sentences in (53), if it is ungrammatical because of a WCO effect, apparently is a problem for the proposed analysis.

Note, however, that it cannot be concluded that the ungrammaticality of the sentences in (53) is attributed to a WCO effect. That is, as shown by the unacceptability of the examples (56), the sentences (53) are unacceptable regardless of whether the sentence has a bound variable reading or not.

- (56) a. *Who_i was it said to John t_i was a genius?
b. *Who_i does it seem to John (that unfortunately) t_i is an idiot?

The ungrammaticality of these examples can be attributed to the properties that the embedded clause is a complement of a passive/unaccusative verb and that a PP is intervening between the verb and the complement clause. With regard to these properties, Kayne (1980) points out that extraction of a subject out of a clause is possible only if the clause appears in a Case position. As shown by the following example, subject extraction out of a clause is disallowed if the clause is a complement of a verb that assigns no Case.

- (57) a. *Who_i is it likely t_i will forget the beer? (Kayne 1980:77)

Moreover, Stowell (1981) observes that subject extraction out of a clause is disallowed if the clause is not adjacent to the verb.

- (58) Who_i did John say (?*to his mother) t_i would help his mother?
(Stowell 1981:395)

Assuming a strict adjacency condition for Case assignment, the unacceptability of the sentence (58) with the PP *to his mother* follows from Kayne's (1980) suggestion.

In the unacceptable examples (53), the clause out of which the subject wh-phrase is extracted is not in a Case position. Therefore they are ungrammatical independently of the availability of a bound variable reading. Thus, the examples (53) do not bear on the analysis proposed in this thesis.¹⁸

¹⁸Note that object extraction out of a clause is possible even though the clause is not Case marked, as shown by the example (ia).

4.3.3 WCO effects in covert movement

Chomsky (1976, 1977a) noted that an in-situ object quantificational element cannot bind a bound pronoun inside the subject. Thus, the sentence in (59-a) cannot have the meaning represented in (59-b).

- (59) a. *The woman he_1 loved betrayed someone $_1$. (Chomsky 1977a:200)
 b. For some x [the woman x loved betrayed x]

As in the case of wh-movement, there is a subject-object asymmetry in a dependency between an in-situ quantificational element and a bound pronoun bound by it. As shown in the following contrast, a subject quantifier can bind a pronoun inside the object, whereas an object quantifier cannot bind it inside the subject.

- (60) a. Everyone $_1$ loves his $_1$ mother. ($\sqrt{\text{bound variable reading}}$)

 (i) a. What $_i$ was it said to John (that) Mary bought t_i ?
 b. *What $_i$ was it said to John t_i was bought t_i ?

Borer (1981) and Stowell (1981) propose that subject extraction out of a non-Case-marked clause causes an ECP violation assuming that a wh-trace in [Spec, CP] cannot serve as a proper governor unless the CP is Case-marked. Given this analysis, the grammaticality contrast in (i) can be accounted for by the ECP: while the subject trace violates the ECP in (i-b), the object trace satisfies the ECP by being properly governed by the verb in (i-a). Thus, ungrammaticality of the sentences in (53), as well as the one in (56), can be due to an ECP violation under the GB framework, although it is unclear how the ECP can be theorized under the framework of the minimalist program in which the notion of *government* is abandoned.

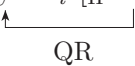
- b. *His₁ mother loves everyone₁. (*bound variable reading)

As for the meaning of the sentence (60-a), it has the logical form as in (61).


- (61) for every x [x loves his mother]

In order to derive the logical form, May (1977) proposes the LF operation *Quantifier Raising* (QR) stated in (62), by which a quantifier move to a scope position leaving its trace to form a syntactic operator variable relationship.

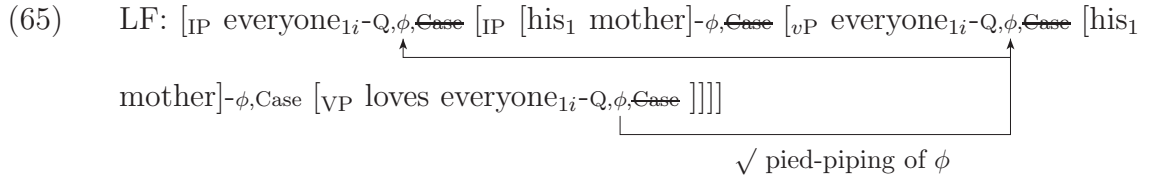
- (62) Adjoin Q (to S) (May 1977:18)

- (63) a. SS: [IP everyone loves his mother]
 b. LF: [IP everyone_i [IP t_i loves his mother]]


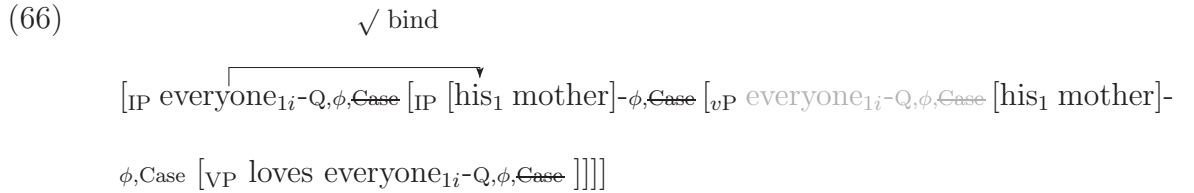
Given the QR operation at LF, the ungrammaticality of the sentences in (59-a) and (60-b) is considered to be an instance of WCO effects. That is, as illustrated in (64-b), an object quantificational element moves across a bound pronoun inside the subject in the unacceptable sentence (60-b).

- (64) a. for every x [his mother loves x]
 b. LF: [everyone_{1i} [IP his₁ mother loves t_i]]


Let us, then, consider how the ungrammaticality of the sentences like (60-b) can be accounted for under the proposed analysis. Note that if QR targets an IP-adjoined position as proposed in May (1977) and it can apply successive cyclically, an object quantifier can carry its ϕ -features to the final landing site under the proposed analysis. That is, differently from the case of *wh*-movement that targets [Spec, CP], if QR targets an IP-adjoined position, the subject in [Spec, IP] is not an intervener for an object's pied-piping its ϕ -features to the landing site, as illustrated in (65).



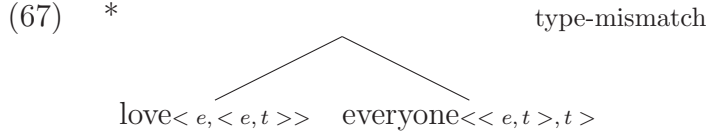
Then, it is wrongly predicted that the unacceptable sentence (60-b) allows bound variable reading because a copy of the quantifier *everyone* in the IP-adjoined position c-commands the copy of *his* in the [Spec, IP].



Thus, the unavailability of the bound variable reading in (60-b) is an issue for the proposed analysis if May's (1977) original analysis for QR is on the right track.

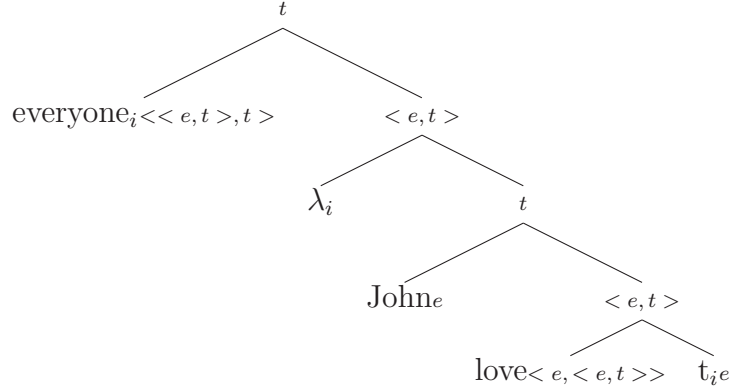
As for QR of object quantifiers, however, Fox (2000) proposes that it raises only to a *vP*-adjoined position (unless there is scope interaction with another element),

and given the proposal, the unavailability of the bound variable reading can be explained under the proposed analysis. Fox (2000) argues that there are two types of QR; one is optional QR and the other is obligatory QR. The first one is motivated by deriving an inverse scope reading, and the second one is motivated by resolving a type-mismatch problem. Along the lines of Heim and Kratzer (1998), QR of an object QP is the latter one. That is, given the proposal made by Barwise and Cooper 1981, generalized quantifiers are second order predicates of type $\langle\langle e, t \rangle, t \rangle$. Therefore, if a QP base-generates in the complement position of a transitive predicate of type $\langle e, \langle e, t \rangle \rangle$ (or predicate of type other than $\langle e, t \rangle$ or $\langle\langle e, t \rangle, t \rangle, \alpha \rangle$), it cannot stay in that position because it causes a type mismatch.



Thus, the quantificational object must undergo movement leaving its trace of type e to adjoin to a node that denotes a closed proposition of type t . Thanks to the movement of the object, the type of its sister turns into $\langle e, t \rangle$ via λ -abstraction, so it can combine with the quantificational object of type $\langle\langle e, t \rangle, t \rangle$ without a type-mismatch.

(68)



Therefore, a type-mismatch problem is resolved by QR, and for that semantic reason, an object QP must undergo QR leaving a trace of type e to adjoin a node of type t .

As for the landing site of the obligatory QR by an object QP, Fox (2000) argues that it must move only to a vP -adjoined position, proposing *shortest move* as stated in (69).

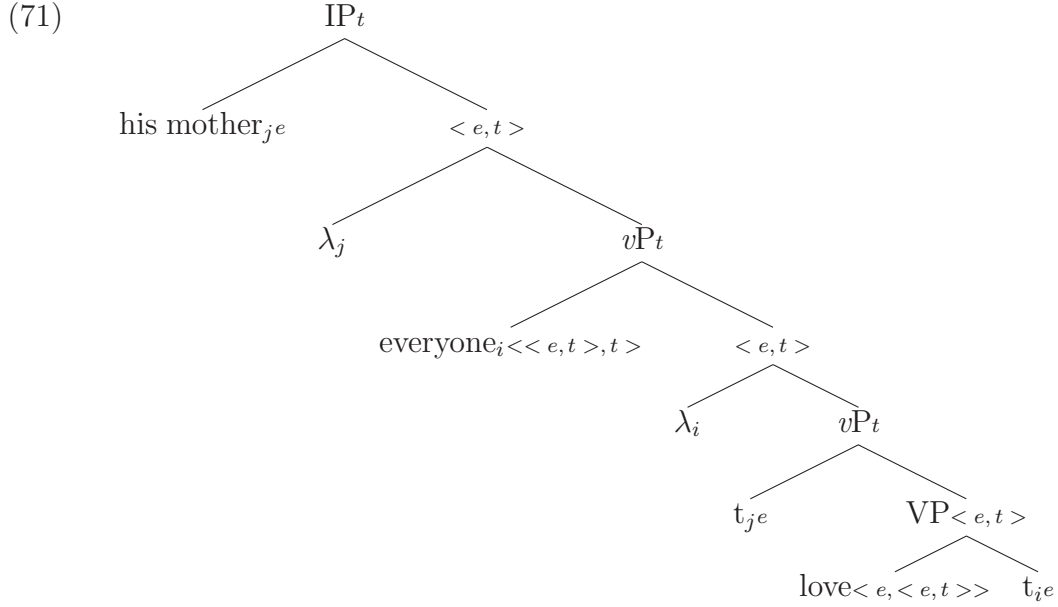
(69) *Shortest Move* (Fox 2000:23)

QR must move a QP to the closest position in which it is interpretable (i.e., the closest clause-denoting element that dominates it).

Given the VP-internal subject hypothesis, the closest XP denoting a closed proposition (i.e., with type t) that dominates the object QP is vP . Thus, the shortest move requires the QP to move to the vP -adjoined position and not to move to a higher position.

(70) $[_{IP} [_{his_1} mother]_{-\phi, Case} [_{vP} everyone_{1i} \text{---} Q, \phi, Case] [_{vP} [_{his_1} mother]_{-\phi, Case} [_{VP} loves$

everyone_{1*i*-Q,φ,Case}]]]]



Then, given Fox's (2000) analysis, the unavailability of a bound variable reading in (60-b) can be accounted for under the proposed analysis. That is, since the QP *everyone* moves to an *vP*-adjoined position by QR and cannot move further, no copy of it c-commands a copy of the bound pronoun *his* that is available for binding/interpretation, so *everyone* cannot bind *his*.

Thus, the unavailability of a bound variable reading when a bound pronoun is contained in the subject and its antecedent QP appears in the object position can be accounted for under the present analysis provided Fox's (2000) analysis, according to which an object QP moves only to a *vP*-adjoined position by QR.¹⁹

¹⁹If May's (1977) analysis in which QR targets an IP-adjoined position is on the right track and QR can occur successive cyclically, I propose that QR does not pied-pipe ϕ -features (and any feature other than relevant to interpretation), assuming that QR is a last resort operation


4.4 Absence of WCO Effects in English

Contrasted to the case where an object undergoes wh-movement across a subject containing a bound variable, some cases do not show WCO effects when a quantificational element moves across a (non-c-commanding) bound variable in English. One case is raising constructions as exemplified in (72-a), and another case is locative inversion as exemplified in (72-b): In the former case, a quantificational raising subject moves across an experiencer containing a bound variable, and in the latter case, a wh-locative phrase moves across a thematic subject containing a bound variable, as illustrated in (73).

(72) a. Who₁ seems to his₁ mother to be clever. (✓ bound variable reading)

for forming a legitimate logical form that can be interpreted at the Conceptual-Intentional (C-I) interface (Chomsky 1992), and the operation moves only Q-feature, which is relevant to scope interpretation. In other words, QR takes place to form syntactic operator variable dependency, and since ϕ -features do not play any role for an XP interpreted as operator, which I assume that Q-feature is relevant for, they cannot be moved/pied-piped by QR for some economical reason.

Given the proposal, the copy in the IP-adjoined position fronted by QR does not retain its ϕ -features. Therefore, it cannot be used as a binder, and since no copy of *everyone* available for binding c-commands a copy of *his*, the sentence does not have a bound variable reading.



- (i) LF: [IP everyone_{1i}-Q [IP [his₁ mother]- ϕ ,~~Case~~ [_vP (everyone_{1i}-Q) [his₁ mother]- ϕ ,~~Case~~ [_vP loves everyone_{1i}-Q, ϕ ,~~Case~~]]]]]
- 
- (ii) [IP everyone_{1i}-Q [IP [his₁ mother]- ϕ ,~~Case~~ [_vP everyone_{1i}-Q, ϕ ,~~Case~~ [his₁ mother]- ϕ ,~~Case~~ [_vP loves everyone_{1i}-Q, ϕ ,~~Case~~]]]]]

- (73) a. who_{1i} seems to his₁ mother [t_i to be clever].
 ↑
 b. [into which room₁]_i went [its₁ cleaning lady t_i]
 ↑

In this section, I address the question why no WCO effects are present in these cases.

4.4.1 Raising constructions

Let us, first, look at raising. As exemplified in (74-a) and (74-c), a bound variable reading is available even when a quantificational element moves across a bound variable in raising constructions.

- (74) a. Who₁ seems to his₁ mother to be clever. (✓ bound variable reading)
- b. who_{1*i*} t_{*i*} seems to his₁ mother [t_{*i*} to be clever].

- c. Everyone₁ seemd to his₁ mother to be smart. (✓ bound variable reading)
- d. everyone_{1*i*} seemd to his₁ mother [t_{*i*} to be smart].


This is because an experiencer DP in a raising sentence is not an intervener for a raising subject's movement to [Spec, IP] with ϕ -features, which is evidenced by the fact that raising subject appears before the verb and agrees with it as exemplified in (75).

- (75) a. A man_i seems to John and Mary to t_i be in the kitchen.
b. Men_i seem to Mary to t_i be in the kitchen.

In the sentences (75), the raising subject undergoes movement to [Spec, IP] across an experiencer DP and agrees with I^0 , which suggests that ϕ -features of an experiencer DP in raising constructions are not an intervener for ϕ -agreement and movement to [Spec, IP] by the raising subject.

Note, however, that the unacceptability of the sentence (76), whose ungrammaticality is supposed to be attributed to a violation of Condition C, suggests that the experiencer *her* c-commands the domain of the embedded clause.

(76) *They seem [to her₁] to like Mary₁.

Then, one may wonder why ϕ -features of an experiencer are not an intervener for the raising predicates carrying its ϕ -features in the examples (75). The reason why the ϕ -features of *her* are not an intervener is that assuming with Chomsky (2001, 2002) that the raising predicate *seem* does not form a Phase, by which the matrix I^0 can access inside the embedded IP, the movement of ϕ -features of *men* is triggered by feature-checking, but not pied-piping.²⁰ Therefore, the experiencer DP, which is not a candidate for feature-checking with I^0 for some reason (see footnote 22 in this chapter), is not an intervener for the movement of ϕ -features of the raising subject

²⁰Contrasted to Chomsky's (2000, 2001) claim, Legate (2003) argues that unaccusative/passive predicates do form a Phase. The relevant example to this claim is the following, in which the unaccusative predicate *escape* meaning "forget" is used.

- (i) a. [At which conference where he₁ mispronounced the invited speaker's₂ name] did every organizer's₁ embarrassment escape her₂? (Legate 2003:508)
- b. did every organizer's₁ [_vP [at which conference where he₁ mispronounced the invited speaker's₂ name] embarrassment escape her₂]

The acceptable sentence (i-a) indicates that the bound pronoun *he* inside the subject is bound by the antecedent *every organizer* and the two DPs *the invited speaker* and *her*, which are co-referential to each other, satisfy Condition C and Condition B respectively. In order to satisfy these requirements, a copy of the subject *At which conference where he mispronounced the invited speaker's name* must be in [Spec, *v*P] as illustrated in (i-b) at LF (or the subject reconstruct its trace position in [[Spec, *v*P]]). Legate (2003) argues that this suggests that *v*P is a Phase.

Note, however, that the example shows that the edge (or Spec) position of *v*P] with unaccusative/passive predicates can be used, but never shows that these predicates must form a Phase. For this reason, I assume that unaccusative/passive predicates does not form a Phrase (or forms a weak Phase along the lines of Chomsky (2000, 2001)) though they optionally allow a movement to its edge/Spec-position.

to [Spec, IP].^{21,22}

²¹Boeckx (2008) argues that an intervening experiencer blocks plural agreement between I^0 and an associate DP, as shown by the unacceptable example (ii-b).

- (i) a. There seems to be a man in the room.
b. There seem to be men in the room. (a-b, Boeckx 2008:139)
- (ii) a. There seems to Mary to be a man in the room.
b. *?There seem to Mary to be men in the room.
c. There seems to Mary to be men in the room. (a-c, Boeckx 2008:139)

If ϕ -features of an experiencer are interveners for the checking relation between I^0 and an associate DP, the experiencer (*to*) *Mary* should also be an intervenor for the checking relation between I^0 and *men* in the embedded [Spec, IP] in (77), which is problematic for my analysis.

Note, however, that under my investigation, some native English speakers accepted the sentence (ii-b), but some did not, and for the latter speakers, the sentence (iii-b), where an adjunct phrase is intervening between inflected *be* and an associate DP, was also unacceptable.

- (iii) a. There seems on some occasions to be a man in the room.
b. (*?) There seem on some occasions to be men in the room.
c. There seems on some occasions to be men in the room.

This suggests that it is not the case that ϕ -features of an experiencer block the agreement, but a certain link between an agreed verb and an agreed-with DP is blocked by intervening something that has phonological contents. That is, the ungrammaticality of the sentence (ii-b) (for some speakers) should not be attributed to relativized minimality. Similar effects are observed in Italian raising by Bruening (2012). I thank Kenshi Funakoshi (p.c.) for suggesting this possibility

²²As for the reason why the experiencer is not an intervener for agreement, one possibility is that the experiencer gets an inherent Case, which is an inert Case with which a DP does not either

- (77)
$$\begin{array}{c} \text{[IP men-}\phi, \text{Case I}^0\text{-i}\phi \text{ [}_v\text{P v}^0\text{-seem [to Mary-}\phi, \text{Case} \text{ [VP [IP men-}\phi, \text{Case to be in the} \\ \text{kitchen}]]]] \end{array}$$

↑movement for checking

Therefore, in the raising sentence (74-c), the raising subject *everyone* can carry its ϕ -features to the matrix [Spec, IP] as illustrated in (78-a).

- (78) a.
$$\begin{array}{c} \text{[IP everyone}_1\text{-}\phi/\text{Case I}^0 \text{ [}_v\text{P seemed [to [his}_1 \text{ mother]-}\phi/\text{Case} \text{ [IP everyone}_1\text{-} \\ \phi/\text{Case to be smart}]]] \end{array}$$
- b.
$$\begin{array}{c} \sqrt{\text{bind}} \\ \text{[IP everyone}_1\text{-}\phi/\text{Case I}^0 \text{ [}_v\text{P seemed [to [his}_1 \text{ mother]-}\phi/\text{Case} \text{ [IP everyone}_1\text{-} \\ \phi/\text{Case to be smart}]]] \end{array}$$

Thus, the copy of *everyone* in the matrix [Spec, IP] can be used as a binder because it has ϕ -features and its Case-feature is checked, as shown in (78-b). Since the copy of *everyone* in the matrix [Spec, IP], which is available for binding and interpretation, c-commands the copy of the bound variable *his*, which is available for interpretation, the bound variable is licensed in the sentence (74-c).

In summary, the presence of ϕ -feature agreement between I^0 and a raising subject across an experiencer suggests that ϕ -features of the experiencer is not an intervener for the checking relation. Then, under the present analysis, it is predicted that a raising subject can retain its ϕ -features at [Spec, IP] and can be a binder at the position. The prediction is born out as shown by the availability of a bound variable reading in the examples (74-a) and (74-c).

undergo movement itself nor block movement of a lower element (McGinnis 1998).

4.4.2 Locative inversion

Let us, next, look at the case of locative inversion. In English, a complement PP of a certain intransitive can optionally be preposed leaving a thematic subject in a post-verbal position, as exemplified in (79-b) and (79-d). Such a phenomenon is called “locative inversion”.²³

- (79) a. My friend Rose was sitting among the guests.
b. Among the guests was sitting my friend Rose.
c. The tax collector came back to the village.
d. Back to the village came the tax collector. (a-d, Bresnan 1994:76)

As exemplified in (80-a), locative inversion does not show a WCO effect; an operator in a fronted locative phrase can bind a bound variable inside a post-verbal subject.

- (80) a. Into which room₁ went its₁ cleaning lady? (\checkmark / bound variable reading)
 b. [into which room₁]_i went [its₁ cleaning lady t_i]
- ↑

The acceptable sentence with a bound variable reading in (80-a) is contrasted with the case without locative inversion in (81).²⁴

²³As for predicates that allow locative inversion, see Levin and Hovav (1995).

²⁴For some speakers, the sentence (81) is not so bad, and the contrast in acceptability between (80-a) and (81) is subtle. It is possible that this is because the wh-phrase in the example is specific (or D-linked), which makes a bound variable reading possible, as I will discuss in Section 4.8.

(81) (*)Into which room₁ did its₁ cleaning lady go? (*bound variable reading)

Under the proposed analysis, the ungrammaticality of the sentence (81) can be explained in the same way as object wh-questions. As illustrated in the derivation (82), ϕ -features of the copy of the subject in [Spec, IP] prevent the wh-phrase (*into*) *which room* from pied-piping its ϕ -features to [Spec, CP]. Then, the copy of (*into*) *which room* in [Spec, CP] is not available for binding. Since the copy of *its cleaning lady* in [Spec, *v*P] with unchecked Case feature is not available for interpretation, no available copy of (*into*) *which room* c-commands an available copy of the bound variable *its* at LF, so the bound variable is not licensed.

- (82) a. [_{vP} [into which room]_{- ϕ} [[its cleaning lady]_{- ϕ} v^0 [_{VP} went [into which room]_{- ϕ}]]]
- b. [_{IP} its cleaning lady]_{- ϕ} I⁰ [_{vP} [into which room]_{- ϕ} [[its cleaning lady]_{- ϕ} v^0 [_{VP} went [into which room]_{- ϕ}]]]]
- c. [_{CP} [into which room]_{- ϕ} did [_{IP} [its cleaning lady]_{- ϕ} I⁰ [_{vP} [into which room]_{- ϕ} [[its cleaning lady]_{- ϕ} v^0 [_{VP} went [into which room]_{- ϕ}]]]]]
- *pied-piping of ϕ

- (83) LF: [_{CP} [into which room] did [_{IP} [its cleaning lady]_{- ϕ /Case} I⁰ [_{vP} [into which room]_{- ϕ} [[its cleaning lady]_{- ϕ /Case} v^0 [_{VP} went [into which room]_{- ϕ}]]]]]

Now, let us consider why a bound variable reading is possible in the case with locative inversion. In order to illuminate this, let us, first, look at what is the syntactic structure and derivation of locative inversion constructions. As exemplified

in (84), lexical unergative verbs, as well as lexical unaccusative verbs as in (79-b) and (79-b), can be used in locative inversion.

- (84) a. Into the room walked a man.
b. Over the fence jumped a horse.
c. Into my eye flew a mig.

Note, however, that as shown in the following examples, lexical unergative verbs become syntactic unaccusatives with a locative PP.

- (85) a. There walked a man into the room.
b. There jumped a horse over the fence.
c. There flew a mig into my eye. (a-c, Hoekstra and Mulder 1990:34)

In the above examples, the lexical unergative verbs, *walk*, *jump*, and *fly*, appear in *there* constructions, which is allowed only with unaccusative predicates in English. The acceptable cases are contrasted with the following unacceptable cases where non-locative PP appears with the unergative verbs.

- (86) a. *There walked a man with a dog.
b. *There jumped a horse right at the queen's arrival.
c. *There flew a mig at high speed. (a-c, Hoekstra and Mulder 1990:34)

As shown in the following, non-locative PP cannot undergo inversion.

- (87) a. *With a dog walked a man.
 b. *Right at the queen's arrival jumped a horse.
 c. *At high speed flew a mig.

Thus, locative inversion is allowed only with lexical or syntactic unaccusatives in English. Given this, a thematic subject DP is base-generated within a locative complement, which may be a PP as in (88-b) or a certain XP forming a small clause as in (88-b) (Hoekstra and Mulder 1990). Since either way is compatible with my analysis, I leave it as an open question which structure is appropriate.

- (88) a. [VP walk [PP a man [P' into the room]]]
 b. [VP walk [SC a man [PP into the room]]]

Let us, next, look at what the position of the locative phrase is in locative inversion. Hoekstra and Mulder (1990) shows that a locative phrase behaves similarly to a normal subject in *wh*-questions. Firstly, *wh*-questions of a fronted locative phrase does not involve *do*-support as shown in (89), as well as a canonical subject as shown in (90).

- (89) a. *Out of which barn did run a horse?
 b. Out of which barn ran a horse? (a-b, Hoekstra and Mulder 1990:32)
 c. *On which wall did hang a portrait of the artist?
 d. On which wall hung a portrait of the artist? (c-d, Bresnan 1994:102)
- (90) a. *Which horse did run out of the barn?

- b. Which horse ran out of the barn? (a-b, Hoekstra and Mulder 1990:32)
- c. *Which portrait of the artist did hang on the wall?
- d. Which portrait of the artist hung on the wall? (c-d, Bresnan 1994:102)

Secondly, wh-questions of a fronted locative phrase is subject to *that*-trace effects as shown in (91-a), as well as a canonical subject as shown in (91-b).

- (91) a. Into which room did you say (*that) walked the children?
 b. Which children did you say (*that) walked into the room?

(a-b, Hoekstra and Mulder 1990:33)

With these observations, it is generally assumed that a locative phrase occupies the canonical subject position [Spec, IP] in locative inversion. Then, a possible derivation of the sentence in (92) is as illustrated in (93).

- (92) Into the room walked a man.

- (93) a. [VP walk [a man [into the room]]]
 b. [IP [into the room]_i I⁰ [_{vP} v⁰ [VP walk [a man t_i]]]]
-
- ↑

Note that in locative inversion, I⁰ agrees not with a fronted locative PP but with a post verbal subject, as shown in (94).

- (94) a. In the swamp was/*were found a child.
 b. In the swamp were/*was found two children. (a-b, Bresnan 1994:95)

The absence of ϕ -agreement between I^0 and a locative PP can be explained by assuming that ϕ -agreement in English is triggered by D_ϕ -feature; since a locative PP does not have D-feature, it cannot be a target of the agreement. Under this analysis, the movement of a locative PP is triggered just by EPP requirement.

$$(95) \quad \begin{array}{c} \text{EPP} \qquad \qquad \qquad \phi\text{-feature checking} \\ \swarrow \qquad \qquad \searrow \\ [\text{IP } [\text{in the swamp}]_{i-\phi} I^0 [\text{beP be } [_{vP} v^0 [_{VP} \text{found } [[\text{two children}]_{-D,\phi} t_i]]]]] \end{array}$$

Given the analysis for locative inversion discussed here, the absence of WCO effects in locative inversion in English can be explained under the proposed framework. A possible derivation of the sentence (80-a), *Into which room walked its cleaning lady?*, is as in (96), where α is PP and β is \bar{P} or α is a small clause and β is PP.^{25,26}

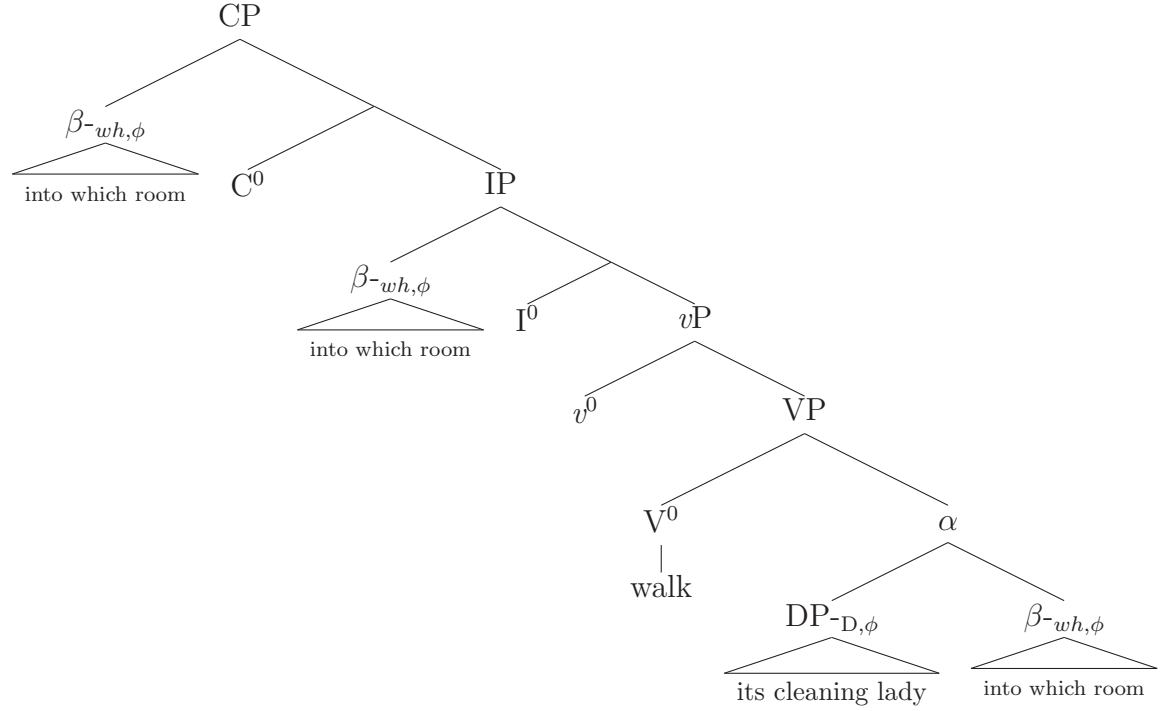
²⁵Another possibility is that the locative phrase *into which room* is in Complement to a head α forming a small clause and the thematic subject DP *its cleaning lady* is in Specifier of the α P, as in the following.

- (i) $[_{VP} \text{walk } [_{\alpha P} \text{its cleaning lady } [_{\alpha'} \alpha^0 [_{PP} \text{into which room }]]]]$

In this case, too, the DP *its cleaning lady* is not an intervener for the locative PP carrying its ϕ -features to [Spec, IP] since Complement and Specifier of the same Head are within the same minimal domain and equidistant from [Spec, IP].

²⁶Chomsky (1995) stipulates that bar level node is not accessible for derivation. If this is correct, β in (96) should not be \bar{P} because it undergoes movement.

(96)



In the derivation (96), the locative PP undergoes movement to to [Spec, IP] triggered by EPP feature checking. When it moves to [Spec, IP], it can pied-pipe its ϕ -features to the landing site because the thematic subject DP and the locative PP are within the same minimal domain, α , so the subject DP is not an intervener for the pied-piping. Then, after that the locative PP moves to [Spec, CP] to check a wh-feature. Again, this movement allows ϕ -features of the PP to be pied-piped to the landing site because no intervener is there. Then, a possible LF structure of the sentence is as follows.

- (97) LF: $[_{CP} [_{\text{into which room}}]_{-wh,\phi} C^0 [_{IP} [_{\text{into which room}}]_{-wh,\phi} I^0 [_{vP} v^0 [_{VP}$
 walked $[_{\alpha} [_{\text{its cleaning lady}}]_{-D,\phi} [_{\text{into which room}}]_{-wh,\phi}]]]$

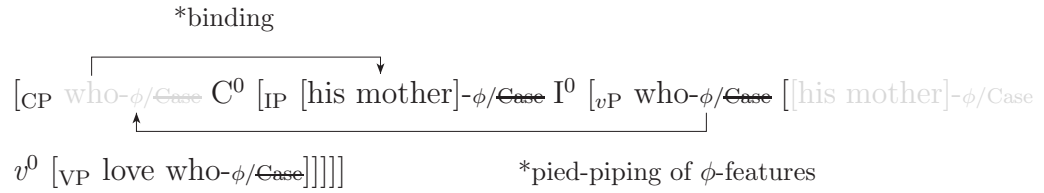
In the LF structure, the copy of *into which room* in [Spec, CP] or [Spec, IP] has ϕ -features, so it is available for binding. Since these copies c-command the copy of the bound variable *its*, the bound variable is licensed. That is why no WCO effects are observed in locative inversion.

4.5 Summary: Presence/Absence of WCO Effects in Clause-internal Movement in English

In summary, in section 4.3 and 4.4, I presented a new analysis for capturing the presence/absence of WCO effects. Under the analysis, whether a moved quantificational element can license a bound variable is determined by whether the licenser can pied-pipe its ϕ -features to a position that c-commands a copy of the bound variable. Given the analysis, a bound variable reading is impossible when a quantificational object moves across a subject containing a bound variable, because ϕ -features of the subject are interveners for the object's pied-piping its ϕ -features to [Spec, CP], which makes the copy in [Spec, CP] unavailable for binding, as illustrated in (98). On the other hand, in raising constructions and locative constructions, a bound variable reading is possible, when a quantificational element moves across an experiencer DP or a logical subject containing a bound pronoun, because the experiencer DP or the logical subject is not an intervener for the movement of ϕ -features to [Spec, IP], as illustrated in (99-a) and (99-b).

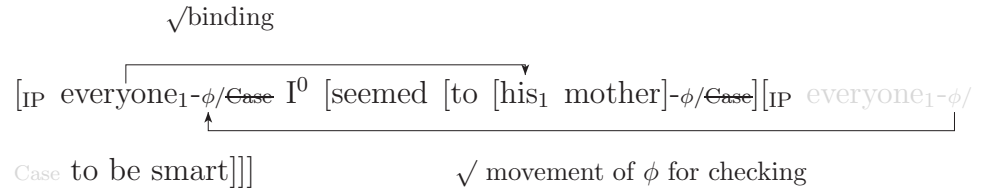
(98) **Presence of WCO effects**

Object wh-question

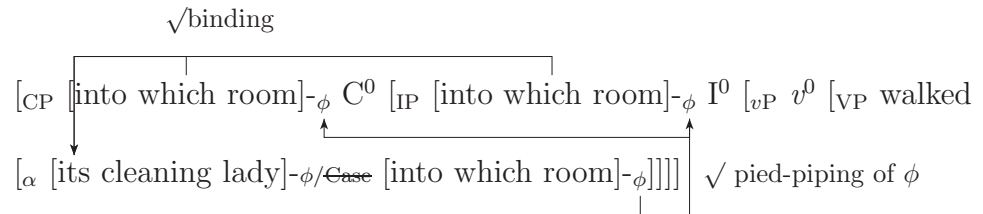


(99) **Absence of WCO effects**

a. *Raising-subject wh-question*



b. *Locative inversion*



This is how the generalization that \bar{A} -movement induces WCO effects, whereas A-movement does not can be derived without recourse to A/ \bar{A} -distinction.

4.6 Weakest Crossover

Lasnik and Stowell (1991) observe that WCO effects are absent in appositive relative clauses, *tough* constructions, parasitic gap constructions and topicalization even

though an operator moves across a non-c-commanding bound pronoun co-indexed with it, which is exemplified in (100). They call these cases “Weakest Crossover”.²⁷

- (100) a. Gerald₁, who_{1*i*} his₁ mother loves t_{*i*}. (Lasnik and Stowell 1991: 706)
- b. Who_{1*i*} t_{*i*} will be easy for us to get his₁ mother to talk to e_{*i*}?
- c. Who_{1*i*} did you stay with t_{*i*} [before his₁ wife had spoken to e_{*i*}]?
- d. This book_{1*i*}, I expect its₁ author to buy e_{*i*}.
(b-d, Lasnik and Stowell 1991:691)

Note that in the four cases in (100), the antecedent of the possessive pronoun, *his* or *its*, is not a quantificational noun phrase but a referential one in the appositive relative clause (100-a) and in the topicalization (100-d). Therefore, these examples do not show that a bound variable reading is really possible in the appositive relative clause and in the topicalization. That is, because its antecedent is a referential nominal, the possessive pronoun in the examples is just a pronoun, but not a bound variable, and the coreferentiality between it and its antecedent does not require bound-variable licensing; as far as the pronoun satisfies Condition B and its antecedent satisfies Condition C, they can be coreferential. Thus, it is unclear, from

²⁷Chomsky (1982) claims that WCO effects are totally absent in restrictive relative clause. However, Higginbotham (1980), Safir (1986), Lasnik and Stowell (1991), Postal (1993) disagree with the claim. They report that restrictive relative clauses show WCO effects.

- (i) a. *every man₁ that his₁ mother love
- b. *no house₁ that its₁ owner sold (a-b, Lasnik and Stowell 1991:706)
- c. *the kid₁ who his₁ sister called a moron (Postal 1993:540)

the examples in (100), whether WCO effects are absent in appositive relative clauses and topicalization. I will discuss the case of topicalization later, but we know from the examples (100-b) and (100-c) that WCO effects are absent at least in the *tough* constructions and parasitic gaps. Thus, let us, first, consider why there are no WCO effects in these two cases.

As for the *tough* constructions and parasitic gap constructions, previous studies (Chomsky 1977b, 1981, Browning 1987 a.o. for *tough* constructions and Contreras 1984, Chomsky 1986a, Browning 1987 a.o. for parasitic gaps) argue that they involve null operator movement, as illustrated in (101).²⁸

- (101) a. This book_{*i*} is easy (for John) [Op_{*i*} to read t_{*i*}]
 b. What_{*i*} did you file t_{*i*} [Op_{*i*} before reading t_{*i*}]

Evidence for the presence of null operator movement is that although the two constructions show unboundedness, they are sensitive to island effects. That is, a gap can appear within a complement clause to a *tough* predicate or a parasitic gap clause with series of embedded clauses, as shown in (102-a) and (103-a), but the comple-

²⁸*for* of “*for* + DP” in *tough* constructions is not a complementizer that appears inside the complement clause, but a preposition that appears in the matrix clause, which is evidenced by the fact that “*for* + DP” can be preposed as in (i-a) and an expletive cannot appear after *for*.

- (i) a. For John, this book is easy to read.
 b. *It will be tough for there to be at least some students in the class on time.
 (Koster and May 1982:125)

ment clause or the parasitic gap clause cannot contain an island, as shown in (102) and (103).^{29,30}

²⁹Browning (1987) reports that a sentence like (102-a), where a gap appears in the finite embedded clause in *tough* constructions, is somehow degraded, though not ungrammatical. Similarly, a parasitic gap in tensed clauses makes the sentence degraded, though not ungrammatical (Lasnik and Stowell 687:695).

³⁰Another piece of evidence for a null operator movement in *tough* constructions is that a parasitic gap, which is assumed to be licensed only by an \bar{A} -moved element, can appear in the *tough* construction (Chomsky 1982, Montalbetti et al. 1982, Engdahl 1983)

- (i) These papers_{*i*} were hard for us to file *e_i* [without reading *pg_i*]. (Engdal 1983:12)

Moreover, as well as in wh-questions, but not in a typical A-movement case, a gap in the indirect object position in double object constructions is disallowed in *tough* constructions.

- (ii) a. Who_{*i*} did you give a book to t_{*i*}? (Chomsky 1977:104)
 b. *Who_{*i*} did you give t_{*i*} a book?
 c. What_{*i*} did you give John t_{*i*}? (b-c, Lasnik and Fiengo 1974:550)
 d. Mary_{*i*} was sent t_{*i*} a letter.
 e. *?A letter_{*i*} was sent Mary t_{*i*}. (d-e, Larson 1988:362-363)
- (iii) a. John_{*i*} was tough to give criticism to *e_i*.
 b. *John_{*i*} was tough to give *e_i* criticism. (a-b, Lasnik and Fiengo 1974:549-550)
 c. Good books_{*i*} are tough for John to give Mary *e_i*. (Wexler and Culicover 1981:275)

Given these observations and another property that a gap position in *tough* construction is a Case position, It is safely concluded that *tough* constructions involve \bar{A} -movement of a null operator, rather than A-movement of the subject DP.

- (102) a. (?) John_i is easy (for us) to convince Bill that he should meet *e_i*.
 (Chomsky 1977:104)
- b. *John_i is easy (for us) to convince Bill of [the need for him to meet *e_i*].
 (*Complex NP island*, Chomsky 1977:104)
- c. ??John_i is fun for us to find out how to annoy *e_i*.
 (*Wh-island*, Browning 1989:9)
- (103) a. (?) Which book_i did you file t_i [without believing Mary would like *e_i*]
 (Chomsky 1986a:57)
- b. *the men John interviewed t_i [before announcing [the plan to speak to
e_i]] (*Complex-NP island*)
- c. *the men John interviewed t_i [before asking you [which job to give to *e_i*]]
 (*Wh-island*)
- d. *the men John interviewed t_i [before expecting you to leave [without
 meeting *e_i*]] (*Adjunct island*) (b-d, Chomsky 1986a:55)

The island sensitivity can be explained if a null operator undergoes movement within a complement clause to a *tough* predicate or a parasitic gap clause.

- (104) *[Op_i [*island* . . . t_i . . .]]

Lasnik and Stowell (1991), pointing out that the operator that moves across a bound variable in Weakest Crossover is semantically non-quantificational, propose that the trace of the operator is not a true variable (but a null epithet that is subject to

Condition C), defining a variable as in (105).

(105) X is a variable iff:

- a. X is in an A-position, and
- b. X is locally \bar{A} -bound by a true QP (Lasnik and Stowell 1991:711)

Given the definition of a variable as in (105), the trace of the null operator in the *tough* construction (100-b) and the parasitic gap construction (100-c) is not a variable, so it is exempted from a principle responsible for WCO effects, like the Bijection Principle (Koopman and Sportiche 1983).

(106) *Bijection Principle* (Koopman and Sportiche 1983:146)

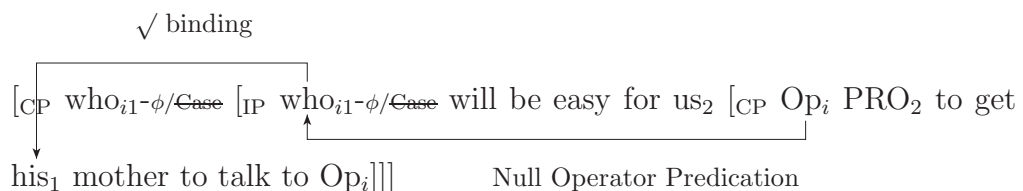
Every variable is locally bound by one and only one \bar{A} -position, and every \bar{A} -position locally binds one and only one A-position.

Therefore, with the definition of a variable in (105), it is possible to explain the absence of WCO effects in *tough* constructions and parasitic gap constructions. Note, however, that such an approach relies on A/ \bar{A} -distinction, and using A/ \bar{A} -distinction in our theory is problematic as I discussed in Section 4.2. Thus, let us consider how to explain the absence of WCO effects in the two constructions without resorting to A/ \bar{A} -distinction.

Under the analysis proposed in this thesis, it is possible to explain why WCO effects are absent in *tough* constructions and parasitic gap constructions, given that null operator movement is involved in the two constructions. In the case of *tough*

constructions, due to a null-operator movement followed by a null operator predication (Chomsky 1981, Browning 1987, a.o.), an antecedent of a bound pronoun is base-generated in the subject position which is higher than the bound pronoun, as illustrated in (107).

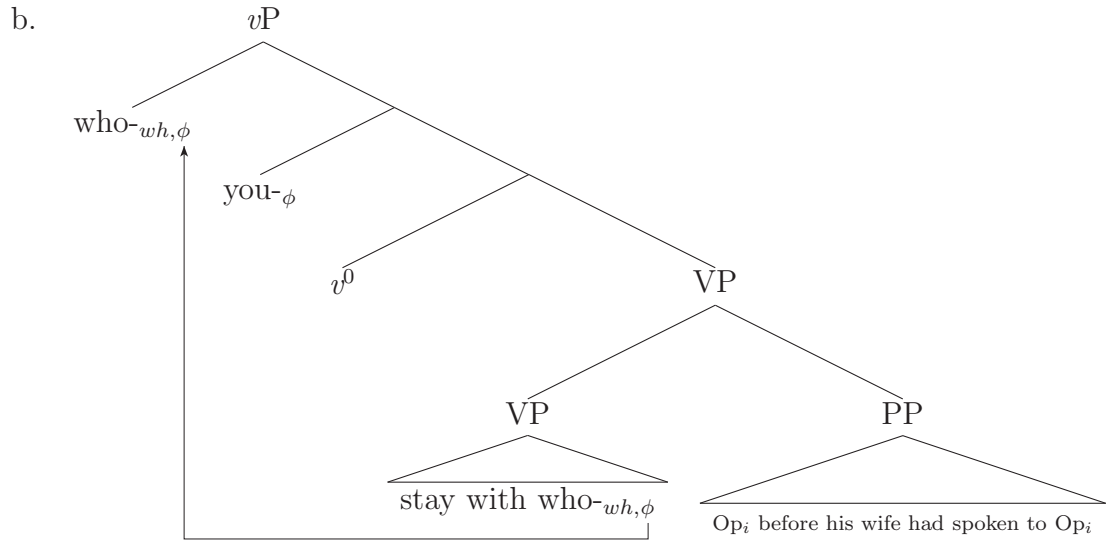
(107) Who_{1i} t_i will be easy for us to get his₁ mother to talk to e_i?



Therefore, the antecedent can retain its ϕ -features at the position c-commanding an available copy of the bound pronoun. That is why the subject of *tough* constructions can bind a bound variable within the complement clause without showing WCO effects.

In the case of parasitic gap sentence (100-c), its acceptability can be explained with the assumption that the adjunct PP adjoins to VP (or another position lower than *vP*-edge position). Given the assumption, a copy of the wh-phrase, *who*, in *vP*-edge position can be a license of the bound pronoun *his*; as illustrated in (108-b), *who* can carry its ϕ -features to *vP*-edge position because the landing site is equidistant to the subject *you* in [Spec, *vP*] from the pre-movement position. Since the copy in the edge-position c-commands the copy of *his* in the adjunct clause, a bound variable reading is available.

- (108) a. [CP Who_{1-wh} did [IP you-_φ [_vP Who_{1-wh,φ} you-_φ [VP [stay with Who_{1-wh,φ}] [before his₁ wife had spoken to e_i]]]]]?]



Thus, given the null-operator movement hypothesis, the absence of WCO effects in *tough* constructions and parasitic gap constructions can be explained under the proposed analysis.

As for topicalization, Lasnik and Stowell (1991) state that quantificational phrases cannot occur as Topics, and that is why they use a referential noun phrase for their examples like (100-d). Contrary to their claim, however, Postal (1993) points out that quantificational phrases cannot appear as Topic only when they are “simple” and they can be topics if they are modified with adjective phrases or relative clauses, as exemplified in (109).

- (109) a. [Anyone who was sick]₁, they would have fired e_1 .
 b. [Anyone less popular]₁, they would have fired e_1 .
 (a-b, Postal 1993:542)

Then, Postal (1993) uses complex quantificational phrases to test whether WCO effects are present or absent in Topicalization. Postal (1993) reports that topicalized quantificational element cannot bind a possessive pronoun presenting the examples in (110-c).

- (110) a. Jack_{1*i*}, I told his₁ wife that I had called e_i .
 b. [Everybody else]_{1*i*}, I told his₂ wife that I had called e_i .
 c. *[Everybody else]_{1*i*}, I told his₁ wife that I had called e_i .
 (a-c, Postal 1993:542)

Contrary to Postal's (1993) claim, however, Pica and Snyder (1994) reports that WCO effects are absent in the Topicalization sentences in (111).³¹

- (111) a. [Anybody else]_{1*i*}, his₁ boss would have fired e_i .
 b. [Everybody else]_{1*i*}, his₁ mother likes e_i . (Pica and Snyder 1994:339)

It seems, at first glance, that Postal's (1993) claim and Pica and Snyder's (1994) are contradictory. Notice, however, that Postal's example and Pica and Snyder's ones are structurally different in that the former involves a long-distant dependency

³¹Pica and Snyder (1993) report that they do not have a clear contrast between (110-b) and (110-c).

between the topic phrase and its gap position, while the latter involves a clause-internal dependency. That is, in the unacceptable case (110-c), Topicalization takes place across a clause boundary, whereas in the acceptable cases (111), it takes place within a clause. Thus, if the judgements given in the two studies are real, it can be generalized that WCO effects are absent in clause-internal Topicalization but present in long-distance Topicalization. Such a different property between a long-distance dependency and a clause-internal one also can be found in other phenomena. As discussed In Chapter 6, while clause-internal scrambling can bleed WCO effects, long-distance scrambling cannot in Japanese (and other languages).

Under the analysis developed in this thesis, it is possible to capture the difference between long-distance Topicalization and clause-internal Topicalization if Topicalization in English is derived via movement of a topic phrase to an IP-adjoined position (Baltn 1982 and Lasnik and Saito 1992, a.o.), as illustrated in (112).^{32,33}

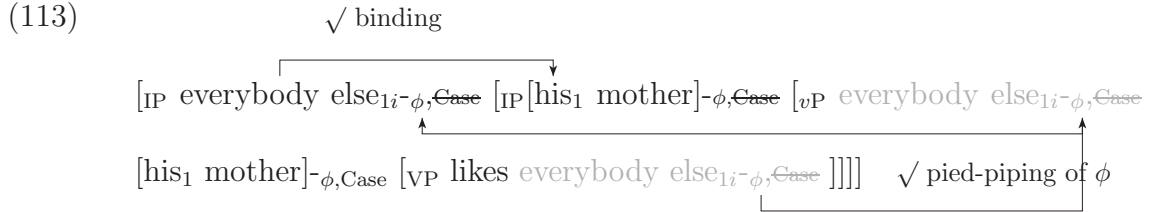
(112) $[_{IP} \text{ John}_i \text{ } [_{IP} \text{ Mary likes } t_i]]$

³²Lasnik and Saito (1992) propose that either IP-adjoined position or [Spec, CP] position can be a landing site of a topicalized phrase in matrix Topicalization, though not in embedded one.

³³As observed in Ross (1967), Topicalization is island-sensitive, which suggests that Topicalization involves movement.

- (i) a. This book, I asked Bill to get his students to read.
- b. *This book, I accept the argument that John should read. (*Complex NP island*)
- c. *This book, I wonder who read. (*Wh-island*) (a-c, Chomsky 1977:91)

With the analysis, the absence of WCO effects in clause-internal Topicalization is explained as follow. As illustrated in (113), the DP *everybody else* first moves to the *vP*-edge position (i.e., outer [Spec, *vP*]). In this case, the copy of the subject DP *his mother* in the inner [Spec, *vP*] is not an intervener for the DP pied-piping its ϕ -features because they are within the same minimal domain. After that, the DP moves to an IP-adjoined position, as proposed in Baltin (1982) and Lasnik and Saito (1992). In this case too, it can carry its ϕ -features to the landing site because [Spec, IP] and IP-adjoined position are within the same minimal domain so the subject *his mother* in [Spec, IP] is not an intervener for the pied-piping. Therefore, the topicalized DP can retain its ϕ -features at the final landing site, so it can bind a copy of the bound pronoun *his* in the [Spec, IP].



This is how the absence of WCO effects in clause-internal Topicalization is explained under the proposed analysis.

In the case of long-distance Topicalization, on the other hand, WCO effects are present because the embedded subject (or the matrix element as in the case of long-distance wh-questions) is an intervener for a topicalized DP's pied-piping its ϕ -features to the matrix clause. That is, when a DP is Topicalized long-distantly, it has to stop by the edge-position of the embedded clause, i.e., the embedded [Spec,

CP], but the movement of the DP from the *v*P-edge position to the embedded [Spec, CP] cannot be accompanied by pied-piping of ϕ -features because of intervening ϕ -features of the subject in [Spec, IP], as illustrated in (114-a). Then, any copies of the topicalized DP created after that lack ϕ -features, which means that no copies of the DP in the matrix clause have ϕ -features. Since under the proposed analysis, having ϕ -features is a necessary condition for a DP to be a binder, no copies of the topicalized DP in the matrix clause can bind the bound pronoun that base-generates in the matrix clause, as illustrated in (114-b).

- (114) a. [CP everybody else_{1*i*}-_{Case} [IP I- ϕ ,_{Case} [_vP everybody else_{1*i*}- ϕ ,_{Case} [I- ϕ ,_{Case} [_vP likes everybody else_{1*i*}- ϕ ,_{Case}]]]]] * pied-piping of ϕ
- b. *binding
- [IP [everybody else]_{1-Case} [IP I [_vP [everybody else]_{1-Case} I [_vP told his₁ wife [CP . . .]]]]]

This is why WCO effects are present in long-distance Topicalization. Thus, given the proposed analysis, it is possible to explain the grammatical difference in WCO effects between long-distance Topicalization and clause-internal Topicalization.³⁴

³⁴Contrary to the claim made by Baltin (1982) and Lasnik and Saito (1992) that Topicalization involves movement of a topic phrase, some studies claim that it is derived by a null-operator movement that causes a predication and base-generation of a topic DP, as illustrated in (i) (Chomsky 1977, 1981, Guéron 1986).

(i) John_{*i*}, OP_{*i*} his_{*i*} mother likes t_{*i*}. (Guéron 1986:62)

To summarize, as discussed in Lasnik and Stowell (1991), *tough* constructions and parasitic gap constructions show no WCO effects. Under the analysis developed in this thesis, the absence of WCO effects can be explained given that the two constructions involve null operator movement (Chomsky 1977, 1981, 1986, Browning 1987, Contreras 1984). In the case of Topicalization, while long-distance Topicalization shows WCO effects, clause-internal Topicalization does not. The difference between the two cases can be explained given the proposal made by Baltin (1982) and Lasnik and Saito (1992) that Topicalization involves movement of a topicalized DP to an IP-adjoined position.

Given this approach, it is still possible to explain the absence of WCO in clause-internal Topicalization: because the topicalized DP is base-generated in the surface position, it has ϕ -features and can bind a bound pronoun that the DP c-commands, as well as in the case of *tough* constructions.

- (ii)
- $$\begin{array}{c} \sqrt{\text{bind}} \\ \hline \text{[everybody else]}_{1-\phi}, [\text{OP}_{1i} \text{ his}_1 \text{ mother likes } t_i] \end{array}$$

Note, however, that under the null-operator analysis, it is unclear why long-distance Topicalization shows WCO effects, if the judgement reported in Postal (1993) is correct. That is, given the null-operator analysis, it is predicted that long-distance cases also allow variable binding by a topicalized DP, since the DP, if it base-generates in the surface position, can possess its ϕ -features and license a bound pronoun at the surface position, as well as in clause-internal Topicalization.

- (iii)
- $$\begin{array}{c} \hline \text{[[Everybody else]}_{i-\phi}, [\text{Op}_i \text{ I told his}_1 \text{ wife that I had called } t_i]] \end{array}$$

Thus, if the presence of WCO effects in long-distance Topicalization is real, the asymmetry between long-distance Topicalization and clause-internal Topicalization lends support to the topic movement approach proposed in Baltin (1982) and Lasnik and Saito (1992).

4.7 Strong Crossover vs. Weak Crossover: Condition C

Postal (1971) first observes that a sentence is unacceptable if a noun phrase moves across another noun phrase that is coindexed with it, which he named *Crossover*.

- (115) a. Schwarz₁ talked to Harry₂ about himself_{1/2}.
b. Schwarz₁ talked about Henry₂ to himself_{1/*2}. (Postal 1971:37)
- (116) a. *Who_{1*i*} does Mary think he₁ hurt t_{*i*}? (Postal 1971:74)
b. *Who_{1*i*} did his_{*i*} ghost scare t_{*i*}? (Postal 1971:165)
c. *[Whose₁ ghost]_{*i*} did he₁ see t_{*i*}? (Postal 1971:165)
d. *the one₁ who_{1*i*} Charley thinks he₁ hurt t_{1*i*} (Postal 1971:83)
e. *the one₁ [whose₁ ghost]_{*i*} he₁ saw t_{*i*} (Postal 1971:165)
f. *the one₁ who_{1*i*} his_{*i*} ghost scares t_{*i*} (Postal 1971:165)

Wasow (1972) points out that in a Crossover situation, acceptability of a sentence differs depending on whether a pronoun coreferential with a moved NP is “more deeply embedded” than a pre-movement position of the NP or not. Although Wasow (1972) does not give a definition of “more deeply embedded” just giving the list of the cases where a pronoun is “more deeply embedded”, it can be roughly understood as “does not c-command”.³⁵ That is, if a pronoun that is coindexed with a moved

³⁵The list of the situations where a pronoun is “more deeply embedded” is the following.

- (i) a. “[If a pronoun is dominated by a cyclic node [(NP and S)] not dominating the NP,

NP c-commands a trace of the NP, a sentence becomes totally unacceptable as in (117-a), while if it does not c-command the trace, a sentence is “far less deviant than” the other case, as in (117-b).

- (117) a. *Who_{1i} did he₁ say Mary kissed t_i? (Wasow 1972:135)
- b. ?[Which well-known actor]_{1i} did [the policeman who arrested him₁] accuse of t_i being drunk? (Wasow 1972:137)

The former case is what is called *Strong Crossover* (SCO) and the latter case is *Weak Crossover* (WCO). Note that in Wasow’s (1972) example (117-b), a specific wh-phrase is used and the bound pronoun is embedded in the relative clause. Such

then the pronoun will be considered, by convention, to be more deeply embedded.”

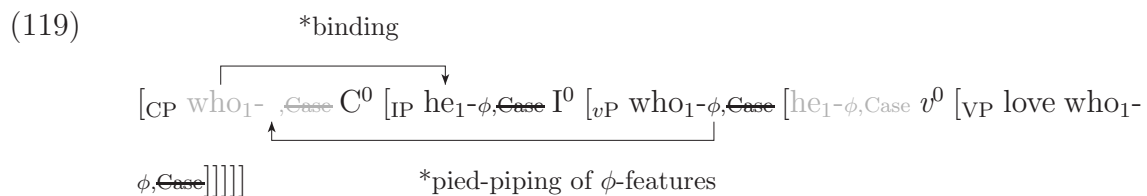
- b. “[I]f the pronoun is part of a prepositional phrase, the NP is not, and the NP commands the pronoun, then the pronoun is more deeply embedded.”
- c. “[I]f the pronoun is the subject or object of a sentence containing the NP, the pronoun is not more deeply embedded.”
- d. “[I]f the pronoun is a possessive determiner, linguistic theory will not specify whether the pronoun is more deeply embedded than the NP, so that individual speakers are free to make their own determination.” (Wasow 1972:52)

As described in (d), the acceptability of the case with a possessive pronoun has across-speaker variation. In this thesis, I construct a theory to derive WCO effects in sentences like *Who₁ does his₁ mother love?* regarding such a sentence as unacceptable. However, it is unclear how the grammar of speakers who fully accept the sentence is at this point. A thorough survey to collect more data is required to illuminate this issue.

properties make the sentence more acceptable than sentences without them like (118-b).³⁶ Nonetheless, it is widely accepted that SCO examples like (118-a) is much worse than WCO ones like (118-b).

- (118) a. *Who_{1*i*} does he₁ like t_{*i*}?
 b. ?*Who_{1*i*} does his₁ mother like t_{*i*}?

Under the analysis proposed in this thesis, the unavailability of a bound variable reading in SCO cases can be explained in the same way as the case of WCO effects. As illustrated in (119), the wh-phrase *who* cannot carry its ϕ -features to the [Spec, CP], so it cannot bind the copy of the bound pronoun *he* in the [Spec, IP], which is only the copy available for interpretation.



However, a question that arises here is how the difference in acceptability between SCO cases and WCO cases can be explained. Why are SCO cases much worse than WCO cases?

As for the total ungrammaticality of SCO sentences, Chomsky (1981) attributes that to a violation of Condition C of the binding theory assuming that

³⁶The question why specific wh-phrase tends not to show WCO effects is addressed in Section 4.8.

a trace left by \bar{A} -movement is an R-expression.

(120) *Condition C*

An R-expression is A-free. (Chomsky 1981:188)

- (121) a. α is X-bound by β iff α and β are coindexed, β c-commands α , and β is in an X-position.
- b. α is X-free iff it is not X-bound. (Chomsky 1981:184-185)

Given this proposal, the ungrammaticality of (118-a) can be explained as well as (122).

(122) *He₁ likes John₁.

That is, in both of the cases, the R-expression, the trace of *who* in (118-a) and *John* in (122), is A-bound by the subject *he*, which violates Condition C. Thus, the complete unacceptability of SCO sentences can be explained as being due to a Condition C violation.

Let us, then, consider how Condition C effects can be explained under the analysis developed in this thesis. A first question arises as to which level Condition C applies to. For the answer of this question, Chomsky (1981) argues, with the following examples, that Condition C must apply at S-structure rather than at LF.

- (123) a. *He₁ liked every book that John₁ read.
- b. *I don't remember who thinks that he₁ read which book that John₁

likes.

(a-b, Chomsky 1981:197)

According to Chomsky (1981), in the examples (123), the R-expression *John* is not c-commanded by the co-indexed pronoun *he* at LF due to QR or LF wh-movement. Therefore, if Condition C applies at LF, these sentences would be grammatical. The unacceptability of the sentences suggests that Condition C must not apply at LF, but at S-structure.³⁷

Note, however, that if QR in sentences like (123-a) targets a *v*P-adjoined position as proposed in Fox (2000) and if no movement of an entire wh-phrase in-situ is involved in sentences like (123-b) (Pesetsky 1987, Aoun and Li 1993, Watanabe 1992a, Tsai 1994, a.o), the unacceptable examples in (123) are not the crucial evidence for the hypothesis that Condition C applies only at S-structure; the hypothesis that Condition C applies at LF is also compatible with the data.

Contrasted to Chomsky (1981), Fox (1999) argues that Condition C must apply only at LF, pointing out that QR in antecedent-contained deletion (ACD) bleeds Condition C effects, as shown in the following acceptable sentence.

- (124) You reported him₁ to every cop that John₁ was afraid you would.
(Fox 1999:185)

³⁷Showing that the sentence (i) is acceptable, Chomsky (1981) concludes that it is not the case that Condition C applies at D-structure.

- (i) Which book that John₁ read did he₁ like?

Assuming that VP-ellipsis involves PF-deletion licensed by LF parallelism (Merchant 2001), in the ACD sentence (124), the entire quantifier phrase *every cop that John was afraid you would* undergoes QR to the outside of the *vP*, so that the *vP* in the matrix clause and the one in the elided part become parallel at LF as [report him to x].³⁸

- (125) you [every cop that John₁ was afraid you would <report him to x>.]_x
 [reported him₁ to x]

Due to the QR of the quantifier phrase, the R-expression *John* is no more c-commanded by the pronoun *him*, so the sentence does not violate Condition C. Note that in the sentence (124) the pronoun *him* appears to bind the R-expression *John* at S-structure. Therefore, if Condition C applies at S-structure, the sentence should be ungrammatical. Given the acceptability of the sentence (124), Fox (1999) concludes that Condition C should not be applied at S-structure, but must be applied at LF.

However, as Nobert Hornstein and Howard Lasnik point out (p.c.), it is problematic to assume that the absence of Condition C violation in the sentence (124) is attributed to QR in ACD. That is, as shown by the acceptability of the sentence (126), which involves no ACD, the absence of Condition C violation in (124) is irrelevant of the presence of QR.

³⁸In the example (124), the QP that is supposed to undergo QR has already got Case. Thus, the LF object shift approach for ACDs proposed in Lasnik (1993) and Hornstein (1994) cannot be used for the sentence.

- (126) You reported him₁ to every cop that John₁ was afraid you would report him₁ to.

Thus, it cannot be concluded from the sentence (124) that Condition C must apply only at LF.

Let us, then, consider the following example.

- (127) Otagai₁-o_i [John to Mary]₁-ga t_i hihansita.
 each.other-ACC John and Mary-NOM criticized
 Lit: ‘Each other₁, [John and Mary]₁ criticized.’

In the example (127), the anaphor *otagai* “each other” undergoes scrambling to the front of the sentence. Under the framework of Chomsky (1981), the S-structure of the sentence violates Condition C (and Condition A).

- (128) SS: each other_i, [John and Mary]_i criticized t_i. (order irrelevant)

That is, if the scrambled element *otagai* “each other” is in an A-position, it binds the R-expression, *John to Mary* “John and Mary”, yielding a violation of Condition C, and if it is in an \bar{A} -position, its trace, which is an R-expression, is bound by *John to Mary* yielding a violation of Condition C. Thus, given that the sentence is acceptable, Condition C is not applied at S-structure. If Condition C is universal, the Japanese example (127) shows that Condition C is not applied at S-structure, but at LF under the framework of Chomsky (1981). Although the framework proposed in this thesis is different from the one of Chomsky (1981), I adopt the hypothesis that

Condition C applies at LF, by which it is possible to explain Condition C effects without resorting to A/ \bar{A} -distinction under the proposed analysis.

Provided that Condition C is applied only at LF, let us consider how a violation of Condition C in SCOs can be analyzed under the proposed framework. Under Chomsky's (1981) framework, a trace left by \bar{A} -movement is an R-expression, which causes a Condition C violation. Notice that under the analysis developed in this thesis, a trace of a moved XP is a copy of the XP and a distinction between A/ \bar{A} -position in binding is abolished. Thus, Condition C should be restated in terms of copies without the notion of A/ \bar{A} -distinction. First, remember the definition of binding proposed in this chapter.

- (129) α binds β only if
- (i) α is co-indexed with β , and
 - (ii) a copy of α c-commands a copy of β , and
 - (iii) the copies have ϕ -features

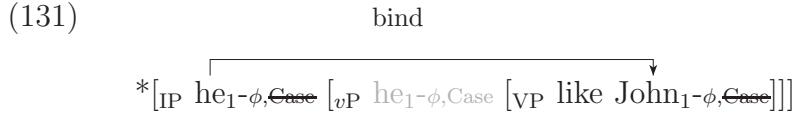
Without the A/ \bar{A} -distinction, Condition C is simply re-stated as in (129).

- (130) *Condition C*

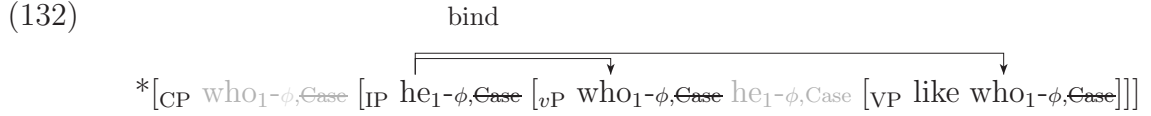
An R-expression must not be bound.

Given the definition of binding and the Condition C in (129) and (130) assuming that Condition C applies at LF, the sentence (122) is ungrammatical because the copy of *he* in [Spec. IP] binds the copy of the R-expression *John* in [Complement,

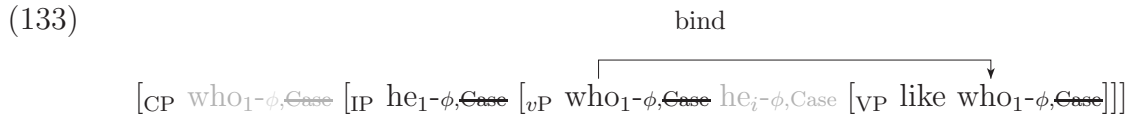
VP] as illustrated in (132), and this violates Condition C.



In a similar way, the sentence *Who₁ does he₁ like?* violates the Condition C because the copy of *he* in [Spec, IP] binds the copy of *who* in the *vP*-edge position and the one in [Complement, VP] as illustrated in (132).



Note, importantly, that with the definition of binding (129), the R-expression *who* is bound not only by *he* but also by *who* itself, because the copy of *who* in the *vP*-edge position c-commands the copy of *who* in [Complement, VP].



This means that a sentence would violate the Condition C whenever an argument undergoes a wh-movement regardless of whether the sentence is in a Crossover situation or not. That is, even in a sentence like (134), in which no coreferentiality exists between the two arguments, the Condition C is violated because *who* binds *who* itself by the copy of *who* in the *vP*-edge position c-commanding the copy of *who*

in [Complement, VP] .

(134) Who does Mary like?

(135)

$$\begin{array}{c}
 \text{bind} \\
 \hline
 [\text{CP } \text{who}_{1-\phi, \text{Case}} [\text{IP } \text{Mary-}\phi, \text{Case} [\text{vP } \text{who}_{1-\phi, \text{Case}} \text{Mary-}\phi, \text{Case} [\text{VP } \text{like } \text{who}_{1-\phi, \text{Case}}]]]]
 \end{array}$$

Therefore our theory wrongly predicts that sentences like (134) are unacceptable.

To solve the problem, I revise the definition of Condition C as in (136), by which binding of α by α itself does not cause a Condition C violation.

(136) An R-expression must not be bound by an element distinct from it.

(137) α is distinct from β iff no copy of α is a link of the chain of β .

Given the new definition of Condition C as in (136), there is no Condition C violation in the sentence (134) because the copies of *who* in [Complement, V] and in the *vP*-edge position are a link of the chain of *who*, so the binding of the former by the latter is exempted from a Condition C violation.

(138)

$$\begin{array}{c}
 \text{links of the same chain} \rightarrow \text{no Condition C violation} \\
 \hline
 [\text{CP } \text{who}_{1-\phi, \text{Case}} [\text{IP } \text{Mary-}\phi, \text{Case} [\text{vP } \text{who}_{1-\phi, \text{Case}} \text{Mary-}\phi, \text{Case} [\text{VP } \text{like } \text{who}_{1-\phi, \text{Case}}]]]]
 \end{array}$$

Similarly, another case of no Crossover situations as in the sentence (139) is explained.

(139) Who_{1*i*} t_{*i*} said he₁ kissed Mary?

(140) [_{CP} who_{1- ϕ ,Case} [_{IP} who_{1- ϕ ,Case} [_{vP} who_{1- ϕ ,Case} said he₁ kissed Mary]]]

In the LF structure (140), no copy of the R-expression *who* and *Mary* is c-commanded by a co-indexed copy with ϕ -features in a different chain, so the structure satisfies the Condition C.

Thus, with the definition of Condition C as in (136), SCO situations are successfully distinguished from non-SCO cases by Condition C.³⁹

Given the analysis so far, the difference in acceptability between SCO cases and WCO cases can be understood as that a SCO sentence is worse than a WCO sentence because while the latter just violates the licensing condition on bound variables, the former violates Condition C in addition to the licensing condition on bound variables. Therefore in SCO cases, a sentence is unacceptable even though a bound variable reading is not involved. To see this, take a look at the following examples.

(141) *Topicalization*

a. *John_{1*i*}, he₁ said that Mary kissed t_{*i*}. (Abe 1993:113)

³⁹In the cases where a null operator predication is involved, an operator that causes predication and its antecedent DP must be in the same chain, as illustrated in (i); otherwise, the null operator configuration always causes a Condition C violation.

(i) [DP_{*i*} [Op_{*i*} [... t_{*i*}]]]
↑ ↑
└──────────┘
single chain

- b. This book_{1*i*}, I expect its₁ author to buy *e_i*. (Lasnik and Stowell 1991:691)

(142) *Appositive relative clause*

- a. *Gerald₁, who_{1*i*} he₁ thinks nobody likes *t_i* is a nice guy. (Schlenker 2014:211)
- b. Gerald₁, who_{1*i*} his₁ mother loves *t_i* is a nice guy. (Lasnik and Stowell 1991:698)

In the examples (141) and (142), the antecedent of the pronoun is a referential nominal, which means that the coreferentiality of the pronoun and its antecedent is not established via variable binding. Contrasted to the b-examples, where the pronoun coindexed with a fronted DP is contained in another DP, the a-examples are unacceptable. This is because the a-examples violate Condition C. As shown in (143), the copy of the moved DP *John* or the operator *who* in [Complement, VP] is c-commanded by the copy of pronoun *he* in the matrix [Spec, IP], so the pronoun *he* binds the R-expression, *John* or *who*. Therefore, the sentences are ungrammatical with a violation of Condition C.

- (143) a. John_{1-Case} [IP he_{1- ϕ ,Case} said [CP that Mary kissed John_{-1 ϕ ,Case}]]
- b. Gerald₁ [CP who_{1-Case} [IP he_{1- ϕ ,Case} thinks [CP nobody likes who_{1- ϕ ,Case}]
is a nice guy]]

In the b-examples, on the other hand, Condition C is satisfied because no copy of the possessive pronoun c-commands a copy of a moved element.

- (144) a. this book₁-~~Case~~ [_{IP} I- ~~ϕ~~ ,~~Case~~ expect [its₁ author] to buy this book-₁- ~~ϕ~~ ,~~Case~~]]
 b. Gerald₁ [_{CP} who₁-~~Case~~ [_{IP} [his₁ mother]- ~~ϕ~~ ,~~Case~~ loves who₁- ~~ϕ~~ ,~~Case~~]] is a nice guy]

Thus, the grammatical contrast between a-examples and b-examples in (141) and (142) is attributed to the presence/absence of a Condition C violation.

Note that under the proposed analysis, it is possible to explain why so-called A-trace does not causes a Condition C violation. As shown in the acceptable sentence (145-a), a raising subject can bind an experiencer. Although there is a copy of the raising subject *John and Mary* in the c-commanding domain of the anaphor (*to each other*) (i.e., in the embedded [Spec, IP]) as in (145-b), the copy does not violates Condition C.

- (145) a. John and Mary₁ seem to each other₁ to be smart.
 b. [_{IP} [John and Mary]₁ seem to each other₁ [_{IP} [John and Mary]₁ to be smart]]]

Under the framework of Chomsky (1981), an A-trace is supposed to be an anaphor and an \bar{A} -trace is supposed to be an R-expression, which is stipulated from their distributions. Therefore, A-traces, contrasted to \bar{A} -traces, are irrelevant to Condition C, which means that A-traces never violate Condition C.

Under the present analysis, so-called A-traces are copies of a moved element before getting its Case checked, while so-called \bar{A} -traces are copies of the element after getting its Case checked. Therefore, provided our assumption that only a copy whose Case is checked/deleted can be interpretable at LF, so-called A-traces cannot be interpretable at LF. Then, given that Condition C applies at LF, A-traces are exempted from Condition C.⁴⁰

- (146) [IP [John and Mary]₁- ϕ ,~~Case~~ seems [to each other₁]- ϕ ,~~Case~~ [IP [John and Mary]₁- ϕ ,Case to be smart]]

Thus, given the present analysis, it is possible to distinguish A-traces from \bar{A} -traces with regard to Condition C effects without a stipulation made under the framework of Chomsky (1981).

Let us, then, consider the case where a Condition C violation is remedied at LF in Japanese scrambling. As we have already seen, Japanese clause-internal scrambling does not show Condition C effects.

- (147) Otagai₁-o_i [John to Mary]₁-ga t_i hihansita.
 each.other-ACC John and Mary-NOM criticized
 Lit: ‘Each other₁, [John and Mary]₁ criticized.’

The acceptability of the above sentence shows that there is no Condition C violation at LF. Under the present analysis, this means that no copy of *otagai* ‘each other’ that is available for binding/interpretation c-commands any copy of the R-expression

⁴⁰As for how Condition A is satisfied, see Section 4.9.

To summarize, in this section, I discussed Strong Crossover effects, which have been attributed to condition C violations. The ungrammaticality of a sentence with SCO can be explained with Condition C defined in (136) under the proposed analysis.

4.8 Specific (D-linked) Wh-phrases

As shown by the following contrast, there is an asymmetry in WCO effects between specific (or D-linked) wh-phrases and non-specific ones. As in (149-b), WCO effects are not observed if a fronted wh-phrase is specific.

(149) a. ?*Who_{1*i*} do his₁ constituents despise *t_i*?

b. Which famous senator_{1*i*} do his₁ constituents despise *t_i*?

(a-b, Culicover and Jackendoff 1995:262)

In this section, I discuss why specific (or referential) wh-phrases do not show WCO effects. Based on some differences and similarities between specific wh-phrases and non-specific ones, which suggest that specific wh-phrases may base-generate in their surface positions and nevertheless so-called \bar{A} -movement takes place in wh-questions with a specific wh-phrase, I propose that what undergoes wh-movement to [Spec, CP] is a null operator, by which a fronted specific wh-phrase is base-generated in binder for Condition C. Note, however, that if that is on the right track, the acceptability of the sentence (147) is problematic. Therefore I leave this issue as an open question for a further research.

the surface position.

$$(150) \quad [_{CP} \text{ Specific-wh}_{1i} [\text{Op}_{1i} \text{ C}^0 [_{IP} . . . t_i]]]$$

\uparrow
 Predication

As for specific wh-phrases, previous studies have found that they behave differently than non-specific wh-phrases in some aspects. The first difference is that while non-specific wh-phrases show obligatory reconstruction effects, specific wh-phrases do not. As shown in the examples (151), a sentence is unacceptable if a fronted wh-phrase contains an R-expression that is co-referential with a DP that c-commands the trace of the wh-phrase, if a fronted wh-phrase is non-specific.⁴²

(151) *Reconstruction effect with non-specific wh-phrase*

- a. *[How many stories about Diana₁] is she₁ likely to invent t_i?
 - b. *[How many lies aimed at exonerating Clifford₁] is he₁ planning to come up with t_i?
- (a-b, Heycock 1995:558)

The ungrammaticality of the examples can be attributed to a violation of Condition C. That is, as illustrated in (152), in the LF structure of the sentence (151-a), there

⁴²The expression *how many NP* is ambiguous in that it can be referential or non-referential. As shown in the following example, which presupposes the existence of a set of entities, *lies*, if it is interpreted as referential, the sentence shows an anti-reconstruction effect.

- (i) [How many lies aimed at exonerating Clifford₁] did he₁ claim that he₁ had no knowledge of t_i?
- (Heycock 1995:560)

is a copy of the forited wh-phrase *how many stories about Diana* in the object position, so the R-expression *Diana* is bound by the pronoun *she*, which results in a Condition C violation.

(152) Condition C violation

*[... [IP she_{1-φ,Case} Case [... [VP invent [DP how many stories about Diana_{1-φ,Case}] -φ,Case]]]]

Contrasted to non-specific wh-phrases, specific ones do not show obligatory reconstruction effects, as shown by the acceptability of the sentences in (153).⁴³

(153) *Anti-reconstruction effect with specific wh-phrase*

- a. [Which stories about Diana₁]_i did she₁ most object to t_i?
- b. [Which lies aimed at exonerating Clifford₁] did he₁ expect t_i to be effective? (a-b, Heycock 1995:558)

Under the present analysis, the grammaticality of the sentences in (153) cannot be explained if there is a copy of the fronted wh-phrase *which stories about Diana*

⁴³Note that predicates used in (151) and the ones used in (153) are different. That difference makes presupposition of the existence of a set of entities different; due to the interpretation of the predicates, the existence of a set of entities, *stories* or *lies*, is not presupposed in (151), while the existence of the set of entities is presupposed in (153). Because of the absence of the presupposition, the *wh*-phrase cannot be specific or D-linked in the former cases, while thanks to the presence of the presupposition, it can be specific or D-linked in the latter cases. Thus, whether *wh*-phrases can be specific or D-linked is affected by predicates.

because if there is, the sentence would violate condition C as in the case of (151).

(154) Condition C violation

$$\begin{array}{c}
 \left[\dots \left[\text{IP she}_{1-\phi, \text{Case}} \left[\dots \left[\text{VP object to } \left[\text{DP which stories about Diana}_{1-\phi, \text{Case}} \right] - \right. \right. \right. \right. \\
 \left. \left. \left. \left. \phi, \text{Case} \right] \right] \right] \right]
 \end{array}$$

Thus, the acceptability of the sentences in (153) suggests that there should be no copy of a fronted specific wh-phrase in its θ -position. Then, I propose to assume that an empty category base-generates in a θ -position of a specific wh-phrase, and

the wh-phrase base-generates in [Spec, CP] directly.^{44,45}

⁴⁴A similar analysis can explain Romanian wh-questions with a specific wh-phrase. As shown in (i), in Romanian, a clitic must appear with specific wh-phrases as in (i-a), while it cannot with non-specific wh-phrases as in (ii-b).

(i) *Romanian clitic doubling in wh-question*

- a. Pe care (băiat) *(l-)ai văzut?
pe which (boy) him-have seen
 ‘Which one(boy) did you see?’
- b. Pe cine (băiat) *(l-)ai văzut?
pe who him-have seen
 ‘Who did you see?’ (Dobrovie-Sorin 1994)

Moreover, while an inverse scope reading is available with a non-specific wh-phrase as in (ii-b), it is impossible with specific one as in (ii-a).

(ii) *Anti-reconstruction*

- a. Pe care copii i-a felicitat fiecare profesor?
pe which children him-has congratulated every teacher
 ‘Which children did every teacher congratulate?’ (* $\forall > \text{which}$)
- b. Ce carte a citit fiecare copil?
what/which book has read every child
 ‘What book has every child read?’ ($\sqrt{\forall} > \text{which}$)
 (a-b, Avram and Coene 2009:236)

These facts can be explained if non-specific wh-questions involve wh-movement of the wh-phrase itself, while specific wh-questions involve base-generations of the wh-phrase in [Spec, CP] and its coindexed clitic in its θ -position.

(iii) a. *Non-specific wh-questions in Romanian*

[CP wh_i [IP Subj [VP V t_i]]]

b. *Specific wh-questions in Romanian*

[CP wh_i [IP Subj [VP V clitic_i]]]

(155) [CP [which stories about Diana₁]_i [IP she₁ ... [VP object to e_i]]

As predicted under the present analysis, specific wh-questions, but not non-specific ones, are exempted from WCO effects.

(iv) *WCO effects in Romaina*

- a. *Pe cine_{1i} a certat mama lui₁ t_i?
pe who has scolded mother his
 Intended: ‘Who₁ did his₁ mother scold?’
- b. Pe care_{1i} li-a certat mama lui₁ t_i?
pe which.one him-has scolded mother his
 ‘Which one₁ did his₁ mother scold?’ (a-b, Falco 2007:34-35)

⁴⁵Another difference between specific wh-phrases and non-specific ones is presence/absence of superiority effects. Pesetsky (1987) observes that specific wh-phrases, which he calls ‘D-linked’ wh-phrases, do not show superiority effects.

(i) *Superiority Condition* (Chomsky 1973:246)

- a. No rule can involve X, Y in the structure
 $\dots X \dots [\alpha \dots Z \dots \text{-WYZ} \dots] \dots$
 where the rule applies ambiguously to Z and Y and Z is superior to Y.
- b. The category A is “superior” to the category B in the phrase marker if every major category dominating A dominates B as well but not conversely.

As shown in (ii), a structurally higher wh-phrase must undergo wh-movement in multiple wh-questions with non specific wh-phrases.

(ii) *Superiority effects with non-specific wh-phrases*

- a. Who_i did you persuade t_i to read what?
- b. ??What_i did you persuade who(m) to read t_i?
- c. Mary asked who_i t_i read what?

Then, questions arise here as what the empty category is and how the dependency between a specific wh-phrase and the empty category is established. As we will see in the following, specific wh-questions show some island sensitivities and an \bar{A} -movement property, which suggests that the empty category should undergo \bar{A} -movement. Let us, firstly, look at island sensitivities of wh-questions with a specific wh-phrase. As shown in (156-d), a displaced specific wh-phrase is sensitive to island effects.^{46,47}

- (156) a. The hoods of these cars were damaged by the explosion.
 b. *Which cars_i were [the hoods of t_i] were damaged by the explosion?

(*Subject island*: Ross 1986:148)

-
- d. *Mary asked what_i who read t_i. (a-d, Pesetsky 1987:104)

Contrasted to the unacceptable examples in (ii), superiority effects disappear if specific wh-phrases are used, as shown by the acceptable examples (iii).

- (iii) *No superiority effects with specific wh-phrases*
 a. Which book_i did you persuade which man to read t_i?
 b. Mary asked which book, _i which man read t_i. (a-b, Pesetsky 1987:106)

Pesetsky (1987), proposing that superiority effects are a diagnostic for movement, concludes that in-situ D-linked wh-phrases do not have to undergo (covert) wh-movement at all and they can be interpreted via unselective binding (Kamp 1981, Heim 1982).

⁴⁶For an experimental study to show that wh-questions with a specific wh-phrase (or complex wh-phrase called in their study) is sensitive to wh-islands, complex-NP islands, subject islands, and adjunct islands, see Sprouse et al. in press)

⁴⁷Contrasted to these islands, specific wh-phrases are not sensitive to so-called ‘weak’-island (Rizzi 1990, Cinque 1990, a.o.)

- c. John met a lot of girls without going to the club.
- d. *Which club did John meet a lot of girls without going to?

(*Adjunct island*: Cattell 1976:38)

Secondly, as shown in (157), a parasitic gap is licensed in a sentence with a displaced specific wh-phrase.

- (157) [Which papers]_i did John decide to tell his secretary t_i were unavailable
before reading e_i? (Chomsky 1986:54)

Thus, these properties suggest that wh-questions with a specific wh-phrase involve movement, especially \bar{A} -movement.

On the basis of this suggestion, I propose that in such questions, a null operator base-generates in a θ -position to undergoes \bar{A} -movement to cause predication, by which a specific wh-phrase base-generates in [Spec, CP], as illustrated in (158).⁴⁸

⁴⁸I do not conclude that all of specific wh-questions are derived in this way. as shown in the example (i), specific wh-phrases appear to be able to undergo reconstruction though it is controversial whether the coreference between *himself* and its antecedent is due to a property of so-called *picture nouns*.

- (i) Which picture of himself_{1/2} did John₁ think Bob₂ liked t?

If the coreferentiality in (i) is established by reconstructions of the fronted wh-phrase, our conclusion is that specific wh-phrases can base-generate in [Spec, CP] via null-operator predication, as well as undergo wh-movement to the position.

$$(158) \quad [_{CP} \text{Specific-wh}_{1i} [\text{Op}_{1i} \text{C}^0 [_{IP} . . . t_i]]]$$

\uparrow
 Predication

Then, given the proposed structure like (158) for wh-questions with a specific wh-phrase, it is possible to explain the absence of WCO effects in such questions. As illustrated in (159-b), since a specific wh-phrase can base-generate in [Spec, CP] with ϕ -features, it can bind the bound pronoun *his* by its copy in [Spec CP] c-commanding the copy of the bound pronoun *his* in [Spec, IP].

$$(159) \quad \begin{array}{l} \text{a. Which famous senator}_{1i} \text{ do his}_1 \text{ constituents despise } t_i? \\ \text{b.} \end{array}$$

$$\begin{array}{c}
 \sqrt{\text{bind}} \\
 \hline
 [_{CP} [\text{which famous senator}]_{1i-\phi} [\text{Op}_{1i} \text{C}^0 [_{IP} \text{his}_1 \text{ constituents-}\phi, \text{Case ...} \\
 [_{VP} \text{despise } t_i]]]]
 \end{array}$$

4.9 Apparent Subject Reconstruction Effects in English

In Section 4.3, I concluded that a subject that undergoes (A-)movement to [Spec, IP] cannot reconstruct to its trace position. Note, however, that there are some cases where a subject in [Spec IP] is interpreted apparently in a lower position. In this section, I address the question of how such apparent reconstruction effects can be explained under the proposed analysis.

The first case relevant to the issue is that an anaphor contained in a subject can have an antecedent that is in a position lower than [Spec, IP] at S-structure.

- (160) a. Each other's₁ supporters frightened the candidates₁.
 b. Each other's₁ supporters seem to the candidates₁ to be unscrupulous.
 (Boeckx 2001:517)

In the above examples, where a psych-verb and a raising verb are used respectively, the anaphor *each other* is bound by its antecedent that appear to its right.⁴⁹

The question that arises here is how this is explained under the present analysis. Note that if an anaphor is licensed only at LF, the acceptability of the examples cannot be explained under our analysis since the subject must be interpreted at [Spec, IP] at LF, so no copies of the antecedent of the anaphor c-command a copy of the anaphor.

- (161) a. LF: [_{IP} [each other's₁ supporters]- ~~ϕ , Case~~ [_{vP} frightened the candidates₁
 [each other's₁ supporters]- ϕ , Case]]
 b. LF: [_{IP} [each other's₁ supporters]- ~~ϕ , Case~~ [_{vP} seem to the candidates₁
 [_{IP} [each other's₁ supporters]- ϕ , Case to be unscrupulous]]]

Thus, I assume that Condition A of the Binding Theory can be satisfied deriva-

⁴⁹As for the judgement of the sentences like (160), Lasnik (1998b) reports that the sentences in (160) and the sentences in (i) have no clear contrast for him. On the other hand, Boeckx (2001) reports that his informants found a contrast between (160) and (i).

- (i) a. *Each other's₁ supporters attacked the candidates₁.
 b. *Each other's₁ supporters asked the candidates₁ to be more honest. (Boeckx 2001:517)

tionally, as proposed in previous studies (Belletti and Rizzi 1988, Uriagereka 1988, Lebeaux 1990, Epstein et al. 1998, Epstein and Seely 2006, Grewendorf and Sabel 1999, Saito 2003, among others). With that assumption, Condition A is defined as in (162) with the definition of binding (163).

(162) *Condition A*

Anaphors must be bound within a Phase at any stage of the derivation.

(163) α binds β only if

- (i) α is co-indexed with β , and
- (ii) a copy of α c-commands a copy of β , and
- (iii) the copies have ϕ -features.

Given Condition A in (162), the acceptability of the sentences in (160) is explained as follows. As illustrated in (164), during the course of the derivation, there is a stage where a copy of the anaphor *each other* with ϕ -features is c-commanded by a copy of the antecedent with ϕ -features, so the anaphor is bound by its antecedent.

- (164) a. $vP = \text{Phase}$ \surd bind
-
- [vP frightened [VP [the candidates₁]- ϕ ,~~Case~~ V⁰ [each other's₁ supporters]- ϕ ,Case]]
- b. $vP = \text{Phase}$ \surd bind
-
- [vP seem [to the candidates₁]- ϕ ,~~Case~~ [IP [each other's₁ supporters]- ϕ ,Case to be unscrupulous]]]

Therefore the sentence satisfies Condition A in (162).

Thus, apparent reconstruction effects with regard to binding of an anaphor can be explained provided that Condition A can be satisfied at any stage of the derivation.

The second case where the subject in [Spec, IP] is interpreted in a lower position is that a certain kind of QP can take scope under negation, modals, or intentional predicates. Let us take a look at the example (165).

- (165) Someone from New York is likely to win the lottery.
($\exists > \text{likely}, \text{likely} > \exists$)

The sentence (165) is ambiguous. One interpretation is that there is a (specific) person from New York who is likely to win the lottery, which can be true under the scenario where a person bought many tickets enough to make it likely that (s)he wins the lottery. The other interpretation is that it is not the case that there is a specific person who is likely to win the lottery, but just enough tickets were bought by people from New York to make it likely that one of them wins the lottery. The former interpretation is available when the existential quantifier takes scope over the predicate *likely*, while the latter interpretation is available when the quantifier takes narrow scope.

For the narrow scope reading of the subject, May (1977, 1985) proposes that it is derived by Quantifier Lowering (QL) by which a QP subject undergoes lowering to adjoin to the embedded S.

- (166) [e_i is likely [s someone_i [s e_i to win the lottery]]]
↗
QL

Under the framework of the Minimalist Program (Chomsky 1995), which introduces the Copy theory of Movement, Hornstein (1995) proposes that the narrow scope reading of the subject can be derived by interpreting a copy of the subject in its trace position. That is, as illustrated in (167), under the Copy theory of Movement, a raising subject leaves its copy in the trace position, and if the lower copy is interpreted, the subject takes scope under the modal predicate.

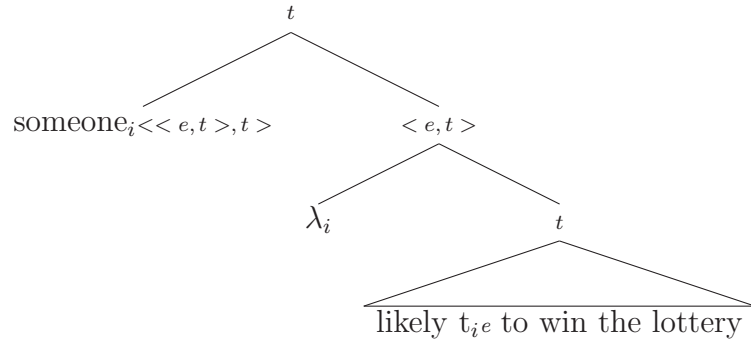
- (167) a. [IP someone_i is likely [IP someone_i to win the lottery]]
b. [IP someone_i is likely [IP someone_i to win the lottery]]

Hornstein's (1995) approach is theoretically better than May's (1977, 1985) since the former can derive the narrow scope reading without using the extra operation QL. Note, however, that as discussed in Section 4.3.1, some empirical facts suggest that a copy of the subject in a lower position is not used for interpretation, and theoretically, given that checking of a feature of a link does not affect the same feature of the other links of a chain, such a copy must not be used at LF since it has an uninterpretable Case feature. Thus, our conclusion is that the subject in [Spec, IP] is not reconstructed to its trace position.

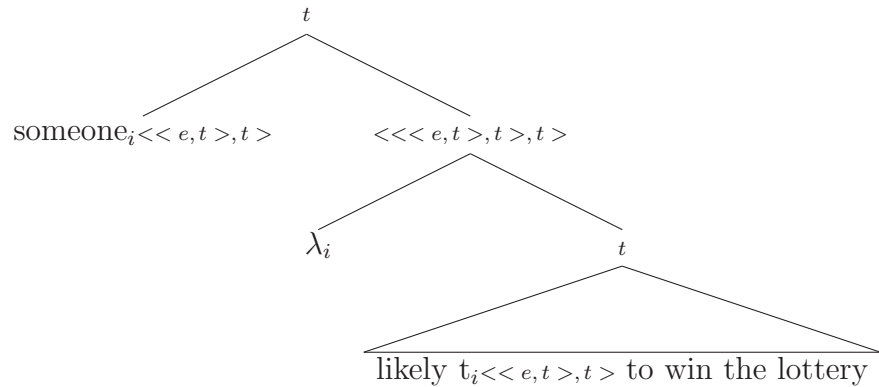
Given that conclusion, the question arises as how the narrow scope reading of the subject is derived. To get a narrow scope reading of the subject, one possible analysis is to derive the meaning by semantics. The idea of such semantic accounts

(Chierchia 1995, Cresti 1995, Rullmann 1995) is that assuming that type of trace can range either over individuals (i.e., type e) or generalized quantifiers (i.e., type $\langle\langle e, t \rangle t \rangle$), a QP can take a narrow scope by leaving its trace with the higher type $\langle\langle e, t \rangle t \rangle$. That is, if the QP leaves its trace with the type e as in (168-a), the QP takes its sister node, which denotes a function from individuals to truth values, as an argument, which results in the interpretation where existential quantifier takes scope over the modal predicate. If, on the other hand, the QP leaves its trace with the type $\langle\langle e, t \rangle t \rangle$ as in (168-b), the QP is an argument of its sister node, which results in the interpretation where existential quantifier takes scope under the modal verb.

(168) a. $(\exists > \text{likely})$

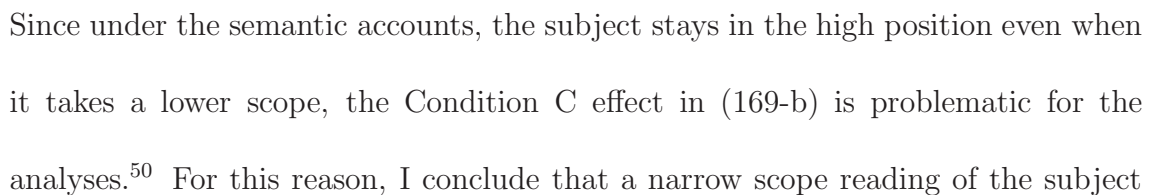


b. $(\text{likely} > \exists)$



Note, however, that as observed in Fox (1999), a lower scope reading of the subject in [Spec, IP] feeds a Condition C violation of an R-expression inside the subject. As shown by the example (169-b), the subject cannot take scope under the modal predicate *seem* if it contains an R-expression coreferential with an experiencer of *seem*.

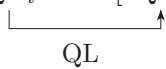
- The unavailability of the inverse scope reading in (169-b) indicates that the QP subject is structurally in a position lower than the experiencer.



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is derived by a syntactic movement of the subject to a lower position at LF. As discussed in Section 4.3, because the subject in [Spec, IP] is not reconstructed to its trace position, I assume with Chomsky (1995) and Fox (1999) that such a movement is Quantifier Lowering (QL), by which a QP undergo lowering to a position other than its trace positions at LF.

$$(171) \quad [_{IP} \text{QP}_i \dots [\text{QP}_i \dots t_i \dots]]$$



 QL

Let us, then, consider why QL, in addition to QR, exists in our theory. Because our theory already has the operation QR, one may wonder whether QL is redundant. For the answer of this question, under the proposed framework, QL is necessary for a subject QP to take a narrow scope with respect to a modal verb given that the modal verb cannot move higher than the subject at LF. To show this, let us look at pretation and NPI licensing. That is, an NPI inside a QP subject can be licensed only if the QP can have inverse scope reading.

- (i) a. A doctor wasn't available. ($\neg > a$) (Linebarger 1980:295)
- b. Many doctors weren't available. ($*\neg > \text{many}$) (Linebarger 1980:296)
- (ii) a. A doctor who knew anything about acupuncture was not available.
- b. *Many doctors who knew anything about acupuncture were not available.

(a-b, Linebarger 1980:227)

If NPI licensing needs c-command relations at LF, the acceptable sentence (ii-a) cannot be explained under the semantic accounts since the NPI *anything* is not c-commanded by the negation under such analyses.

how inverse scope readings between two quantificational elements are derived.

Firstly, in the case where a subject QP takes a scope under an object QP, such an inverse scope reading is available if the object undergoes QR, as in (172-a). Similarly, in the case where a modal predicate takes scope under an object QP, the object undergoes QR as in (172-b). In the case where a subject QP takes scope under a modal predicate, if the modal cannot undergo raising due to a Head-movement constraint violation or no Head-movement at LF (Ladusaw (1979) for no Neg-raising, Fintel and Iatridou (2003) for no raising of a modal at LF), the only way for the subject QP to get a narrow scope reading is to undergo QL as illustrated in (172-d).⁵¹ This is because under the present analysis, when the subject moves to [Spec, IP] to satisfy I⁰'s EPP requirement, it must be interpreted at [Spec, IP], which is higher than the modal. Thus, without lowering it cannot be take scope under the modal.

(172) *Ways of getting inverse scope*

- a. [QP-O ... [QP-S ... [QP-O ...]]] → (Obj > Subj)
↑
QR
- b. [QP-O ... [X⁰-modal ... [QP-O ...]]] → (Obj > Modal)
↑
QR
- c. *[X⁰-modal [QP-S ... (Y⁰)... [X⁰-modal ...]] → *(Modal > Subj)
↑
raising

⁵¹The acceptability contrast in the examples (169) also suggests that a narrow scope reading of the subject should not be attributed to Head-movement of a modal predicate.

$$\text{d. } \underbrace{[\text{QP-S} \dots [\text{X}^0\text{-modal} \dots (\text{Y}^0) \dots [\text{QP-S} \dots]]]}_{\text{QL}} \rightarrow (\text{Modal} > \text{Subj})$$

Therefore, QL is motivated by necessity for the subject to get an inverse scope reading with regard to a modal predicate.

4.10 Conclusion

This chapter investigated binding phenomena in English, especially focusing on WCO effects. As discussed in Section 4.2, although the presence/absence of WCO effects has been explained using the notion of A/ $\bar{\text{A}}$ -distinction, such an analysis has a theoretical problem because it is unclear what is the crucial factor that distinguish A-positions from $\bar{\text{A}}$ -positions. In this chapter, I proposed a new approach to licensing a bound variable without resorting to A/ $\bar{\text{A}}$ -distinction. In order to derive WCO effects without A/ $\bar{\text{A}}$ -distinction, I proposed that only a copy with ϕ -features is available for binding to make the definition of *binding* as in (173).

- (173) α binds β only if
- (i) α is co-indexed with β , and
 - (ii) a copy of α c-commands a copy of β , and
 - (iii) the copies have ϕ -features.


Given this proposal, whether a moved element can be a binder at a landing site is determined by whether it can carry its ϕ -features to the position, which, I propose,

is determined by the theory of generalized pied-piping proposed in Section 2.2. I showed that given the proposed analysis, the presence/absence of WCO effects, Weakest Crossover phenomena, and Condition C effects in English can be accounted for.

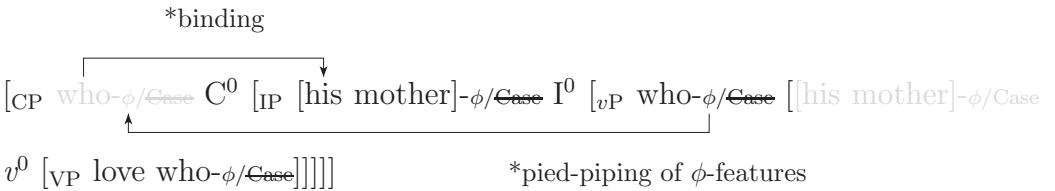
Chapter 5: Cross-linguistic Difference in WCO Effects

5.1 Overview

In English, Weak Crossover (WCO) effects are observed when a quantificational object moves across the subject containing a bound pronoun.

- (1) *?Who_{1*i*} does [his₁ mother] love *t_i*?
- 

As discussed in the previous chapter, the unavailability of a bound variable reading in (1) is explained under the proposed analysis. In short, given the locality condition on generalized pied-piping (Ura 2001) and the anti-locality condition on movement (Koizumi 1993, Abels 2003, Bošković 2005), a moved object cannot pied-pipe its ϕ -features to [Spec, CP], and given the proposal that only a copy with ϕ -features can be a binder, it cannot bind a bound pronoun inside the subject.

- (2)
- 
- The diagram illustrates the syntactic structure for the sentence in (1). The root node is v^0 [VP love who- ϕ /~~Case~~]]], which branches into [CP who- ϕ /~~Case~~ C⁰ [IP [his mother]- ϕ /~~Case~~ I⁰ [_{vP} who- ϕ /~~Case~~ [[his mother]- ϕ /Case]]]]. An arrow labeled '*binding' points from the ϕ -features of the CP Specifier to the I⁰ head. Another arrow labeled '*pied-piping of ϕ -features' points from the ϕ -features of the IP complement to the CP Specifier. The ϕ -features of the subject and the object are shown in grey, while the ϕ -features of the CP Specifier and the I⁰ head are in black.

As well as in English, WCO effects are observed in object fronting in the following languages.¹

- (3) *Qui Sa mère a vu t_{1i} ?
 who his/her mother has seen
 Intended: ‘Who₁ did his/her₁ mother saw?’ (French: Chang 1997:87)

- (4) *Basque*
 a. Nork maite du bere ama?
 who-ERG love AUX his mother-ABS
 ‘Who₁ loves his₁ mother?’
 b. *Nor maite du bere amak?
 who-ABS love AUX his mother-ERG
 Intended: ‘Who₁ does his₁ mother love?’ (Bobaljik 1993:15)

- (5) *Bulgarian*
 a. Koj običa majka si?
 who loves mother his
 ‘Who₁ loves his₁ mother?’
 b. *Kogoi_{1i} običa majka sui t_i ?
 who loves mother his
 Intended: ‘Who₁ does his₁ mother love?’ (Richards 1997:32)

- (6) *Pe cine_{1i} iubeşte mama lui₁ t_i ?
 PE who loves.3SG.PR mother-the his
Who₁ does his₁ mother love? (Romanian: Alboiu 2002:217)

¹In French, Postal (1993) reports that WCO effects are absent in the following sentence.

- (i) Quel homme_{1i} crois-tu que sa₁ mere a appele t_i ?
 which man believe you that his mother called
 ‘Which man do you think his mother called?’ (Postal 1993:552)

Note that in the above example, the fronted wh-phrase is specific (D-linked) wh-phrase, which may makes it possible that the sentence has a bound variable reading, as discussed in Section 4.8.

- (7) ??Vilket fordon_{1*i*} hade dess₁ ägare inte tvättat t_{*i*} på ett helt år.
 which vehicle had its owner not washed for a whole year
 Intended: ‘Which vehicle₁ did its₁ owner not wash for a whole year?’
 (*Swedish*: Platzack 1998:66)

- (8) *Hvem_{1*i*} elsker sin₁ mor t_{*i*}?
 who loves SIN mother
 Intended: ‘Who₁ does his₁ mother love?’ (*Norwegian*: Terje Lohndal, p.c.)

Contrasted to these languages, WCO effects are not observed in object fronting in some languages; as exemplified in the the German example (9), which is a counterpart of the English sentence (1), a bound variable reading is available even though an object wh-phrase moves across a possessive bound pronoun.

- (9) Wen_{1*i*} liebt [seine₁ Mutter] t_{*i*}?
 who-ACC loves his mother.NOM
 ‘Who₁ does his₁ mother love?’ (*German*: Grewendorf and Sabel 1999:17)

As well as in German, WCO effects are not observed in the following languages.

- (10) a. **Dare**_{1-*o*} [soitu₁-no hahaoya]-ga t_{*i*} aisiteiru no?
 who-ACC the.person-GEN mother-NOM love Q
 ‘Who₁ does his₁ mother love?’ (*Japanese*: Saito 1992: 73)
- b. **Nwukwu**_{1-*luli*} cakii(kui)₁-uy pwumo-cocha t_{*i*} miwueha-ni?
 who-ACC self-GEN parent-even hate-Q
 ‘Who₁ do even his₁ parents hate?’ (*Korean*: Lee 2006:436)
- c. **Kisko**_{1*i*} uskii₁ bahin t_{*i*} pyaar kartii thii
 who his sister love does is
 ‘Who₁ does his₁ sister love?’ (*Hindi*: Mahajan 1990:26)

- d. **KİM-İ**_{1i} anne-si₁ t_i ara-dı?
 who-ACC mother-his call-PAST
 ‘Who₁ did his₁ mother call?’ (*Turkish*: Göksel 2011:55)
- e. **Yaare**_{1i} avanga₁ ammaavee t_i verukraanga?
 who-ACC they-GEN mother hate
 ‘Who₁ does his₁ mother hate?’ (*Tamil*: Annamalai 2003:37)
- f. **Evarini**_{1i} vaani₁ talli t_i preemistundi?
 whom his mother loves
 ‘Who does his mother love?’ (*Telugu*: Vijayasri 2003:77-78)
- g. **Kit**_{1i} látott az pro₁ anyja t_i?
 who-ACC see.PAST.3SG the mother-NOM
 ‘Who_i did his_i mother see?’ (*Hungarian*: Richard 1997:33)
- h. **Koga**_{1i} voli njegova₁ majka t_i?
 who loves his-NOM mother-NOM
 ‘Who₁ does his₁ mother love?’ (*Serbo-Croatian*: Richard 1997:33)

The questions that arise here are (i) why the sentences in (10) do not show WCO effects, and (ii) what parametric difference is relevant to distinguish the former type of languages with WCO effects and the latter type of languages without them when an object moves across a subject containing a bound pronoun. We will address these questions in this section.

5.2 Previous Study: Goto 2014

As described in the previous section, some languages show WCO effects but some languages do not in object fronting. In Goto (2014), with the assumption that only a copy with ϕ -features is available for binding and the theory of generalized pied-piping proposed in this thesis, I propose that cross-linguistic differences in presence/absence of WCO effects in object fronting are attributed to the position

in which a subject is interpreted, which is determined by a parametric difference of how I⁰'s Nominative Case checking takes place. In this subsection, I review the analysis proposed in Goto (2014) to point out some problems with it.

In order to explain availability of variable binding without resorting to A/ \bar{A} -distinction, Goto (2014) uses the same analysis as proposed in this thesis. That is, assuming that only a copy with ϕ -features can be a binder, whether a moved element can bind a bindee is determined by whether a copy of the moved element has ϕ -features at the landing site, which is determined by the locality condition on generalized pied-piping and the anti-locality condition on movement.

(11) *Locality Condition on Generalized Pied-Piping*

A formal feature cannot be pied-piped as a free rider if there is an intervening matching feature.

(12) *Anti-locality Condition on Movement*

Movement within a minimal domain is disallowed.

Under the proposed analysis, as explained in detail in Section 4.3.1, the derivation of the sentence *Who does his mother love?* is as follows.

$$\begin{array}{c}
 (13) \quad [\text{CP who-} \quad \text{C}^0 \quad [\text{TP} [\text{his mother}]_{-\phi} \quad \text{T}^0 \quad [\text{vP who-}_{\phi} \quad [[\text{his mother}]_{-\phi} \quad \text{v}^0 \quad [\text{VP love} \\
 \text{who-}_{\phi}]]]]] \quad \xrightarrow{\text{*pied-piping of } \phi}
 \end{array}$$

In the derivation, the wh-phrase *who* cannot carry its ϕ -features from the vP-edge position to [Spec, CP] because of intervening ϕ -features of the subject *his mother*

in [Spec, IP]. Therefore, given the proposal that only a copy with ϕ -features can be a binder, the copy of *who* in the [Spec, CP] cannot be used as a binder.

Goto (2014) assumes that the English sentence *Who does his mother love?* and the corresponding German one *Wen liebt seine Mutter?* in (9) (and possibly the Japanese one *Dare-o soitu-no hahaoya-ga aisiteiruno?* in (10-a)) should have the same derivation as illustrated in (13). Nevertheless, while the former shows a WCO effect, the latter does not. In order to derive the grammatical difference, Goto (2014) proposes, assuming (14) and (15), that the difference between the English case and the German/Japanese one should be attributed to the position where subjects are interpreted.²

(14) Case checking renders an element as interpretable. (Boeckx 2001:518)

(15) In some languages, the Case of subjects must be checked at [Spec, IP] when it is checked by I^0 , while in other languages, it can be checked within a vP .

Under the framework of Chomsky (1995), what is stated in (15) is understood as that I^0 's Case feature is strong in some languages, while it is weak in the other languages. The strong/weak difference of features can be understood, under the

²Under the framework of Chapter 4 of Chomsky (1995), Case-feature is always checked in the domain of IP with/without pied-piping of other materials. Therefore the assumption (15) is restated as in the following.

- (i) In some languages, subjects (i.e., categories of subjects) must be in [Spec, IP] when its Case is checked, while in other languages, they can be in [Spec, vP].

current Probe-Goal Agree system (Chomsky 2000, 2001), as a difference in whether an Agree takes place with a movement or without it. That is, a checking of a strong feature can be understood as an Agree involving movement and a checking of a weak feature can be understood as an in-situ Agree without movement. Thus, in a language where the Case of a subject must be checked at [Spec, IP], Agree/checking by I^0 must involve a movement of the subject to [Spec, IP].

Let us look at how the two assumptions (14) and (15) yield the grammatical difference in presence/absence of WCO effects. First, let us consider the case of languages where Case of subjects must be checked at [Spec, IP]. In such a language, Case of the subject is not checked at the point where \bar{I} is derived, as in (16-a). After that, the subject moves to [Spec, IP] and its Case is checked by I^0 , as in (16-b). Then, finally, wh-movement to [Spec, CP] takes place and the structure (16-c) is derived.

- (16) *Language in which Case of subjects must be checked at [Spec, IP]*
- a. $[I' I^0 [{}_{vP} \text{ who-}\phi/\text{Case} [\text{his mother-}\phi/\text{Case} v^0 [{}_{VP} \text{ love who-}\phi/\text{Case}]]]]$
- b. $[IP [\text{his mother-}\phi/\text{Case} [I' I^0 [{}_{vP} \text{ who-}\phi/\text{Case} [\text{his mother-}\phi/\text{Case} v^0 [{}_{VP} \text{ love who-}\phi/\text{Case}]]]]]$
- c. $[CP \text{ who-}\phi/\text{Case} C^0 [IP [\text{his mother-}\phi/\text{Case} I^0 [{}_{vP} \text{ who-}\phi/\text{Case} [\text{his mother-}\phi/\text{Case} v^0 [{}_{VP} \text{ love who-}\phi/\text{Case}]]]]]$

Now, given the assumption (14), the copy of *his mother* in the [Spec, vP] cannot be used for interpretation. Also given the assumption that only a copy with

ϕ -features can be a binder, the LF structure in which variable binding takes place is as in (17), in which elements in grey cannot be used for binding or interpretation.

- (17) $[_{CP} \text{ who-}\cancel{\text{Case}} C^0 [_{IP} [\text{his mother}]\text{-}\phi/\cancel{\text{Case}} I^0 [_{vP} \text{ who-}\phi/\cancel{\text{Case}} [[\text{his mother}]\text{-}\phi/\text{Case}$
 $v^0 [_{VP} \text{ love who-}\phi/\cancel{\text{Case}}]]]]]$ (*bound variable reading)

In the LF structure (17), no copies of the bound variable *his* that is available for binding/interpretation are c-commanded by a copy of the binder *who* that is available for binding/interpretation. That is why a bound variable is not licensed here. Thus, in a language in which Case of subjects must be checked at [Spec, IP], WCO effects are observed when an object undergoes a movement to [Spec, CP] across a subject.

On the other hand, languages in which Case of subjects can be checked within a *vP* are exempted from WCO effects. This is because as illustrated in (18), Case of the subject is checked at the [Spec, *vP*], so a copy of the subject in the position can be interpretable, as in (19).

- (18) *Language in which Case of subjects can be checked at [Spec. vP]*

- a. $[_{I'} I^0 [_{vP} \text{ who-}\phi/\cancel{\text{Case}} [[\text{his mother}]\text{-}\phi/\cancel{\text{Case}} v^0 [_{VP} \text{ love who-}\phi/\cancel{\text{Case}}]]]]]$
- b. $[_{IP} [\text{his mother}]\text{-}\phi/\cancel{\text{Case}} [_{I'} I^0 [_{vP} \text{ who-}\phi/\cancel{\text{Case}} [[\text{his mother}]\text{-}\phi/\cancel{\text{Case}} v^0 [_{VP} \text{ love who-}\phi/\cancel{\text{Case}}]]]]]]]$
- c. $[_{CP} \text{ who-}\cancel{\text{Case}} C^0 [_{IP} [\text{his mother}]\text{-}\phi/\cancel{\text{Case}} I^0 [_{vP} \text{ who-}\phi/\cancel{\text{Case}} [[\text{his mother}]\text{-}\phi/\cancel{\text{Case}} v^0 [_{VP} \text{ love who-}\phi/\cancel{\text{Case}}]]]]]]]$

- (19) $[_{CP} \text{ who-}\cancel{\text{Case}} C^0 [_{IP} [\text{his mother}]\text{-}\phi/\cancel{\text{Case}} I^0 [_{vP} \text{ who-}\phi/\cancel{\text{Case}} \overbrace{[[\text{his mother}]\text{-}\phi/\cancel{\text{Case}}]^{v^0} [_{VP} \text{ love who-}\phi/\cancel{\text{Case}}]]]]]$ (\checkmark bound variable reading)

In the LF structure (19), a copy of the bound variable *his* in [Spec, *vP*] is c-commanded by a copy of the binder *who* in the *vP*-edge position. That is why a bound variable is licensed in such cases. Thus, if a language allows I^0 's Case checking within *vP*, it is exempted from a WCO effect when an object undergoes movement to [Spec, CP] across a subject.

Remember that English shows a WCO effect, while German and Japanese do not. To derive the cross-linguistic difference, Goto (2014) proposes (20).

- (20) In English, Case of subjects must be checked at [Spec, IP], while in German and in Japanese, it can be checked within a *vP*.

Given the proposal (20), the English sentence should have the derivation in (16) and the LF structure in (17), which leads to the impossibility of variable binding. The German sentence and Japanese one, on the other hand, allow the derivation in (18) and the LF structure in (19), which makes variable binding possible.

Goto (2014) argues that the proposal (20) can be supported by the fact that German and Japanese, but not English, allow Nominative objects.

- (21) a. ... daß ihm **ein Unglück** zustieß
 that he-DAT a misfortune-NOM happened
 ‘that he suffered a misfortune’ (*German*: Haider 1985:88)

- b. Taro-ni **eigo-ga** hanas-e-ru.
 Taro-DAT English-NOM speak-can-PRES
 ‘Taro can speak English’ (*Japanese*: Sugioka 1985:156)

That is, it is predicted that in a language that allows I⁰’s Case feature checking within a *v*P, a DP other than a subject can be marked with Nominative if other conditions are right. One example of such a case is Nominative objects assuming that Nominative Case of Nominative objects is checked by I⁰ as illustrated in (22) (Ura 2000 among others).

$$(22) \quad [_{IP} \text{ Subject}_i \text{ I}^0 \overbrace{[_{vP} t_i [_{VP} \dots \text{Object-NOM}]}]]]$$

The availability of Nominative objects in German and Japanese but not in English can be explained given the proposal in (20). Following the proposal, a derivation like (22) is allowed in German and Japanese, while it is disallowed in English.

Then, Goto (2014) argues that availability of Nominative objects suggests that the language allows Nominative Case checking by I⁰ within a *v*P, and it is predicted, under Goto’s (2014) analysis, that language without WCO effects allows Nominative objects. The prediction is borne out in Korean, Hindi, Turkish, Tamil, and Hungarian as well as in German and Japanese; these languages are exempted from WCO effects as exemplified in (10) and allow Nominative objects as shown in (23).³

³In addition to these languages, Goto (2014) argues that Georgian also shows no WCO effects and allows Nominative objects.

(i) *Georgian*

(23) *Nominative Object constructions*

- a. John₁-eykey **Harry₂-ka** [casin₁/*₂-uy sengkong]-ul-wihayase
 John-DAT Harry-NOM self-GEN success-ACC-for
 philyoha-ta
 need-DECL
 ‘John₁ needs Harry₂ for self’s₁/*₂ success. (Korean: Ura 2000:99)
- b. Siitaa-ko **laRke** pasand the.
 Sita-DAT boys-NOM like were
 ‘Sita likes the boys. (Hindi: Mahajan 1991:265)
- c. Ban-a **para-ø** لازم.
 I-DAT money-NOM need
 ‘I need money. (Turkish: Shibatani 1999:47)
- d. Kumaar-ukku irantu **paiyan-kal-ø** irukkiraarkal.
 Kumar-DAT two boy-PL-NOM are
 ‘Kumar has two boys. (Tamil: Ura 2000:120)
- e. Nem fontos nek-i [**ez a hely**]-ø.
 not important DAT-he this the place-NOM
 ‘This place is not important for him. (Hungarian: Rákosi 2006:158)

Thus, Goto (2014) makes a correlation between the absence of WCO effects in object fronting and the availability of I⁰’s Nominative Case checking within *v*P, which can be judged from a presence of Nominative objects. Following the analysis it is possible to explain why English shows WCO effects whereas German, Japanese,

-
- a. romel moscavle-s apasebs tavis-i mascavlebel-i?
 which-DAT pupil-DAT value 3SG.POSS-NOM teacher-NOM
 ‘Which pupil does his teacher respect?’ (Amiridze 2006:62)
 - b. Me mašinve momeconet **tkven**.
 me-DAT immediately 1SG.liked.2PL.IND you-PL.NOM
 ‘I liked you immediately.’ (Harris 1984:284)

Note, however, that in the example (i-a), the specific (D-linked) *wh*-phrase is used, so the availability of a bound variable reading in (i-a) might be due to this property, as discussed in Section 4.8.

Korean, Hindi, Turkish, Tamil, Hungarian, and Georgian do not in object fronting.

However, there are some problems with Goto's (2014) analysis. The first problem is, as pointed out in Goto (2014), that there are some languages, like Romanian and Bulgarian, that allow Nominative objects but show WCO effects in object fronting.

(24) *Presence of WCO effects*

- a. *Pe cine_{1i} iubeste mama lui₁ t_i ?
 PE who loves.3SG.PR mother-the his
 Intended: 'Who₁ does his₁ mother love?' (*Romanian*: Alboiu 2002:217)
- b. *Kogo_{1i} obiça majka sui t_i?
 who loves mother his
 Intended: 'Who₁ does his₁ mother love?' (*Bulgarian*: Richards 1997:32)

(25) *Nominative objects*

- a. Lui Ion îi plac ei.
 John.DAT DAT.CL like.3PL they.NOM
 'John like them.' (*Romanian*: Rivero and Geber 2003:56)
- b. Na Ivan mu se privizhdame **nie**.
 Ivan.DAT DAT.CL REFL imagine.1PL we.NOM
 'Ivan has a vision of us.' (*Bulgarian*: Rivero and Gerber 2003:64)

The Romanian and Bulgarian data suggest that having Nominative objects and absence of WCO effects in object fronting in a language are not in a one-to-one relationship. Goto (2014) assumes that the presence of Nominative objects indicates that I⁰'s Nominative Case checking can take place within *v*P in the language, which makes it possible to bleed WCO effects in object fronting. Therefore, under Goto's (2014) analysis, it is predicted from the presence of Nominative objects that there

is no WCO effect in object fronting in the languages, contrary to fact. Thus the Romanian and Bulgarian data show that I⁰'s Nominative Case checking within *v*P is not a sufficient condition and there are additional factors to bleed WCO effects in object fronting.

Secondly, although Goto (2014) assumes that I⁰'s Case checking must involve a movement of a checkee to [Spec, IP] (i.e., Nominative Case checking must take place at [Spec, IP]) in English, a post-verbal subject in the locative inversions and quotative inversions in English show that the assumption is wrong.

(26) *Locative Inversion*

- a. Among the guests was sitting my friend Rose.
- b. Back to the village came the tax collector. (a-b, Bresnan 1994:76)

(27) *Quotative Inversion*

- a. "Don't turn back!" warned Marcel.
- b. "The cuckoo barks at midnight", whispered Hilary to his companions.

(a-b, Collins and Branigan 1997:1-2)

As for locative inversions, as discussed in Section 4.4.2, the absence of *do*-support as in (28) and the presence of *that*-trace effects as in (29) suggest that the locative phrase occupies [Spec, IP] leaving the thematic subject within *v*P, as illustrated in (30).

- (28) a. Out of which barn ran a horse?
- b. *Out of which barn did run a horse?

(a-b, Hoekstra and Mulder 1990:32)

- (29) Into which room did you say (*that) walked the children?

(Hoekstra and Mulder 1990:33)

- (30) $[_{IP} [_{\text{back to the village}}]_i I^0 [_{vP} v^0 [_{VP} \text{came} [\text{the tax collector } t_i]]]]$

As for quotative inversions, Collins and Branigan (1997) argue that a post-verbal subject stays inside of the verbal-domain.⁴ The first evidence is that in the inversion, subject must precede the complements of a verb, as shown in (31).⁵

- (31) a. “Where to?” asked the driver of his passenger.
b. * “Where to?” asked of his passenger the driver.
c. “They’ll never make it!” cried John to Mary.
d. * “They’ll never make it!” cried to Mary John.

(a-d, Collins and Branigan 1997:4)

⁴Quotative inversions appear in the written language and spoken narrative, rather than the spoken language. However, Collins and Branigan (1997) “have found that judgements on quite subtle contrasts involving such sentences are sharp and robust, and go well beyond the knowledge which could plausibly be acquired in the course of learning to write or learning to tell stories.” (Collins and Branigan 1997: 2)

⁵When the subject is heavy, it can follow the complements of a verb, which Collins and Branigan (1997) attribute to Heavy-NP shift.

- (i) “Where to?” asked of us the balding driver with a blond mustache.

(Collins and Branigan 1997:5)

The unacceptable sentences in (31) suggest that it is not the case that a post-verbal subject undergoes a right-ward movement to outside of the verbal-domain.

The second evidence is that a quantifier modifying a subject cannot appear to the right of the subject in quotative inversions, which is contrasted to the case where no inversion occurs.

- (32) a. “We must do this again”, the guests all declared to Tony.
 b. *“We must do this again”, declared the guests all to Tony.
 c. “Do you have the time?” the bankers each asked of the receptionist.
 d. *“Do you have the time?” asked the bankers each of the receptionist.

(a-d, Collins and Branigan 1997:6-7)

As exemplified in (32), a floating quantifier modifying the subject is disallowed in quotative inversions. If the post-verbal subject in quotative inversions can be in [Spec, IP] as well as pre-verbal subjects in sentences without the inversion, it is unclear why the subject does not allow a floating quantifier. If, on the other hand, the subject remains in [Spec, *v*P] in the inversion, it is possible to explain the impossibility of a floating quantifier given that a quantifier cannot be floated in a theta-position (Bošković 2001, 2004). Thus, the impossibility of a floating quantifier suggests that the subject does not undergo movement to [Spec, IP].

On the basis of the observations, Collins and Branigan (1997) conclude that the subject remains inside the verbal-domain in quotative inversions.⁶

⁶Collins and Branigan (1997), assuming the Agr-based checking theory and the structure proposed in the theory (Chomsky 1993), argue that the verb moves to AgrO⁰ and the subject remains

- (33) [“Where to?” asked_i [_{vP} the driver t_i of his passenger]]

As seen above, a post-verbal subject remains in the verbal-domain in locative inversions and quotative inversions. Now the question arises as to which Case a post-verbal subject gets and how the Case checking takes place. Note that it is not the case that a post-verbal subject gets an inherent partitive Case from the verb (Belletti 1988) because as shown by the examples (26) and (27), a post-verbal subject in the inversions can be a definite noun. Moreover, Collins and Branigan (1997) observe that although a pronominal subject is not freely used in quotative inversions, a nominative Case form of a post-verbal subject is clearly better than an accusative Case form to the extent that a pronoun can be forced to be used in the inversion.

- (34) a. ??“Don’t snore”, pleaded they.
 b. *“Don’t snore”, pleaded them. (Collins and Branigan 1997:7)

Thus, it is natural to conclude that a post-verbal subject gets nominative Case in the two inversion cases (or at least in quotative inversions). That is, Case of the post-verbal subject is checked by I⁰ in locative inversions and quotative inversions in [Spec, VP] in quotative inversions. Under the Agr-less checking theory, in which a subject base-generates in [Spec, *vP*], however, there is an issue about where the verb is in the inversions. Under the Agr-less checking theory, Ura (2000) proposes that in quotative inversion, a quotative verb overtly moves to I⁰, which is necessary for the checking of I⁰’s EPP feature by a quotative operator.

as illustrated in the following.

- (35) a. $[_{IP} [_{back\ to\ the\ village}]_i I^0 [_{vP} v^0 [_{VP} came [[_{the\ tax\ collector}]_{-Case} t_i]]]]$
- b. $["Where\ to?"] I^0 asked_i [_{vP} [_{the\ driver}]_{-Case} t_i\ of\ his\ passenger]]$

Therefore, post-verbal subjects in the two inversion cases suggest that nominative Case checking by I^0 can potentially take place within vP without a movement of a checkee to [Spec, IP] in English, as well as German and Japanese. This is contrary to the claim made in Goto (2014) that Case checking by I^0 must take place at [Spec, IP] in English. Note, importantly, that Goto (2014) proposes to derive the grammatical difference in WCO effects between English and German/Japanese from the parametric difference in how I^0 's Case checking takes place, as stated in (15), which is repeated in the following.

- (36) *Goto's (2014) assumption*

In English, Case of subjects must be checked at [Spec, IP], while in German and in Japanese, it can be checked within a vP .

Then, provided that Case checking by I^0 can take place within vP even in English, as well as German and Japanese, the grammatical difference between the two types of languages can no longer be derived under Goto's (2014) analysis.⁷ That is, given

⁷Moreover, although Goto (2014) attributes the absence of nominative objects in a language to I^0 's Case checking at [Spec, IP], the lack of nominative objects in English indicates that whether I^0 's Case checking requires a movement of checkee to [Spec, IP] or not in a language is not a crucial

that English potentially allows nominative Case checking of a (thematic) subject within vP , under Goto's (2014) analysis, English should allow a derivation as in (18) and as a consequence, a bound variable reading should be available for the English sentence *Who does his mother love?*, as well as the German/Japanese correspondent sentence. Therefore, there still remains a question about how the cross-linguistic difference in presence/absence of WCO effects can be explained. I address this question in the next section.

5.3 Languages without WCO Effects in Object Fronting

As discussed in Section 4.3.1, the presence of WCO effects in object questions in English is explained as follows: Under the checking system proposed in this thesis as discussed in Section 2.2.4, I^0 's Case checking takes place after a subject moves to the [Spec, IP] when the subject satisfied the EPP requirement. With this proposal and the assumption that only a copy with checked Case feature can be interpretable, a subject cannot be interpretable at [Spec, vP] if it moves to [Spec, IP].

$$(37) \quad [_{IP} [_{his_1} \text{ mother}]_{-\phi/Case} I^0 [_{vP} \text{ who}_{1-\phi/Case} [[_{his_1} \text{ mother}]_{-\phi/Case} v^0 [_{VP} \text{ love} \\ \text{who}_{1-\phi/Case}]]]]$$

factor to determine whether the language has nominative objects or not. Thus, Goto's (2014) idea that makes a correlation between presence/absence of WCO effects in object fronting in a language and presence/absence of nominative objects in the language is not on the right track.

Moreover, when an object wh-phrase moves to [Spec, CP], it cannot carry its ϕ -features to the landing site because of intervening ϕ -features of the subject in [Spec, IP]. Then, with the proposal that only a copy with ϕ -features can be a binder, the copy of the wh-phrase in [Spec, CP] cannot be a binder, so the bound pronoun *his* can never be bound in the LF structure in (38).

$$(38) \quad [_{CP} \text{ who-}\cancel{\phi/\text{Case}} C^0 [_{IP} [\text{his mother}]\text{-}\cancel{\phi/\text{Case}} I^0 [_{vP} \text{ who-}\cancel{\phi/\text{Case}} [[\text{his mother}]\text{-}\cancel{\phi/\text{Case}} v^0 [_{VP} \text{ love who-}\cancel{\phi/\text{Case}}]]]]] \quad (*\text{bound variable reading})$$

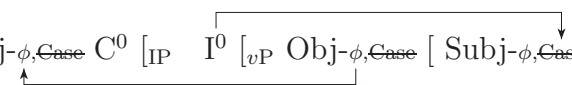
This is how WCO effects are explained under the present analysis.

Notice that in this analysis, the following two things are supposed in the derivation of object wh-questions in English.

- (39) (i) A subject must move to [Spec, IP] in a normal SVO sentence.
(ii) A wh-phrase must move to [Spec, CP] in (single) wh-questions.

The two properties in (39) are necessary conditions for inducing WCO effects. That is, if the condition (i) is not satisfied and a subject can stay in [Spec, *vP*], an object can pied-pipe its ϕ -features to [Spec, CP], and the subject can be interpreted at [Spec, *vP*], as illustrated in (40). Then, the subject and elements inside of it can be bound by the object.

$$(40) \quad \text{a.} \quad [_{CP} \text{ Obj-}\cancel{\phi/\text{Case}} C^0 [_{IP} \quad I^0 [_{vP} \text{ Obj-}\cancel{\phi/\text{Case}} [\text{Subj-}\cancel{\phi/\text{Case}} [_{VP} \dots]]]]]$$



✓ pied-piping of ϕ

b.

$$\text{LF: } [\text{CP } \text{Obj-}\phi, \text{Case } \text{C}^0 [\text{IP } \text{I}^0 [\text{vP } \text{Obj-}\phi, \text{Case } [\text{Subj-}\phi, \text{Case } [\text{VP } \dots]]]]]$$

\swarrow bind
 \searrow bind

Moreover, if the condition (ii) in (39) is not satisfied and a fronted object can move to a position equidistant to the subject in [Spec, IP], i.e. an IP-adjoined position, the object can carry its ϕ -features to the landing site and bind the subject in [Spec, IP], as illustrated in (41).

(41) a. $[\text{IP } \text{Obj-}\phi [\text{IP } \text{Subj-}\phi, \text{Case } \text{I}^0\text{-EPP } [\text{vP } \text{Obj-}\phi [\text{Subj-}\phi, \text{Case } [\text{VP } \dots]]]]]$

\swarrow pied-piping of ϕ
 \searrow bind

b.

$$\text{LF: } [\text{IP } \text{Obj-}\phi [\text{IP } \text{Subj-}\phi, \text{Case } \text{I}^0\text{-EPP } [\text{vP } \text{Obj-}\phi [\text{Subj-}\phi, \text{Case } [\text{VP } \dots]]]]]$$

Thus, the absence of one of the properties in (39) can bleed WCO effects. In this section, I will show that the languages without WCO effects in object fronting listed in (9) and (10) lack the property. That is, the cross-linguistic differences in presence/absence of WCO effects in object fronting can be attributed to presence/absence of the two properties in (39).

5.3.1 Absence of WCO effects in German and comparison with other Germanic languages

Contrasted to English, German shows no WCO effects in object wh-questions. As exemplified in (42), a fronted object wh-phrase can bind a pronoun inside a subject.

- (42) Wen_{1*i*} liebt [seine₁ Mutter] t_{*i*}?
 who-ACC loves his mother.NOM
 ‘Who₁ does his₁ mother love?’ (German)

In this subsection, I argue that a subject does not have to move to [Spec, IP] in German. Therefore, ϕ -features of a subject are not interveners and an object wh-phrase can pied-pipe its ϕ -features to [Spec, CP], which makes it possible that the sentence has a bound variable reading.

German is a V2 language, which is characterized by the property in which the finite verb of the matrix clause appears in the second position preceded by one (and only one) XP.

- (43) *German word order*
- a. **Eine Maus_{*i*}** hat heute t_{*i*} den Käse verschmäht.
 a mouse has today the cheese disdained
 ‘A mouse disdained the cheese today’
 - b. **Den Käse_{*i*}** hat heute eine Maus t_{*i*} verschmäht.
 the cheese has today a mouse disdained
 ‘A mouse disdained the cheese today’
 - c. **Heute_{*i*}** hat t_{*i*} eine Maus den Käse verschmäht.
 today has a mouse the cheese disdained
 ‘A mouse disdained the cheese today’
 - d. [_{VP} **Den Käse verschmäht**]_{*i*} hat eine Maus t_{*i*}
 the cheese disdained has a mouse
 ‘A mouse disdained the cheese today’ (a-d, Haider 2010:1)

In the embedded clause, V2 phenomenon is observed with a certain kind of verbs, like *gesehen* ‘see’, if no complementizer appears.

(44) *German embedded clause without a complementizer*

- a. Er sagt **die Kinder** haben diesen Film gesehen
 he says the children have this film seen
 ‘He says that the children watched the film.’
- b. Er sagt **diesen Film** haben die Kinder gesehen
 he says that this film have the children seen
 ‘He says that the children watched the film.’ (Vikner 1995:66)

With a complementizer, however, the V2 order is disallowed; a finite verb must appear at the end of the clause.

(45) *German embedded clause with a complementizer*

- a. Er sagt daß die Kinder diesen Film gesehen haben
 he says that the children this film seen have
 ‘He says that the children watched the film.’
- b. *Er sagt daß **die Kinder** haben diesen Film gesehen
 he says that the children have this film seen
 Intended: ‘He says that the children watched the film.’
- c. *Er sagt daß **diesen Film** haben die Kinder gesehen
 he says that this film have the children seen
 Intended: ‘He says that the children watched the film.’ (Vikner 1995:66)

On the basis of these properties, it is widely assumed that German is a “mixed-Headed” language in which CP is Head-first whereas IP, *v*P, and VP are Head-last in the Head-Complement parameter, and that a finite verb moves to C⁰ accompanied by a movement of XP to the [Spec, CP] in the main clause.

- (46) a. [CP C⁰ [IP ... [*v*P ... [VP ... V⁰] *v*⁰] I⁰]]
- b. [CP XP C⁰_{*k*}-I⁰_{*j*}-*v*⁰_{*i*}-V⁰_{*i*} [IP ... [*v*P ... [VP ... *t*_{*i*}] *t*_{*j*}] *t*_{*k*}]]

Given the assumption, it is unclear, just from the word order of a sentence, what is the surface position of the subject when an XP other than the subject moves to [Spec, CP]. That is, as illustrated in (47), it is unclear whether the subject moves to [Spec, IP] or stays at [Spec, *v*P].

- (47) a. [CP XP C⁰ [IP Subj [*v*P ... [VP ... V⁰] *v*⁰] I⁰]]
 b. [CP XP C⁰ [IP ... [*v*P Subj [VP ... V⁰] *v*⁰] I⁰]]

As for the surface position of the subject in German, it is argued in previous studies that subjects can stay within the verbal domain in German. First argument is given by Diesing (1992). Diesing (1992), in order to derive the difference between a generic reading and an existential reading of bare plural subjects, proposes the mapping hypothesis, following which a bare plural subject in [Spec, IP] is interpreted as a generic NP and one in [Spec, *v*P] is interpreted as an existential NP. Diesing (1992) observes that the surface position of a bare plural subject affects its interpretation in German. As exemplified in (48), when a subject precedes the particle *ja doch*, the sentence has only a generic reading, while when it follows the particle, the sentence only has an existential reading.

- (48) a. ... weil Kinder **ja doch** auf der Straße spielen.
 since children PRT PRT in the street play
 ‘... since children play in the street.’ (generic reading only)
 b. ... weil **ja doch** Kinder auf der Straße spielen.
 since PRT PRT children in the street play
 ‘... since there are children playing in the street.’
 (existential reading only) (a-b, Diesing 1992:368)

Assuming that the particle *ja doch* is a sentential adverb attaching to a projection of I^0 , Diesing (1992) argues that the subject *Kinder* in (48-a) is in [Spec, IP] and the one in (48-b) is in [Spec, VP]. Thus, given the mapping hypothesis, the former is interpreted as generic and the latter is interpreted as existential.

$$(49) \quad [_{CP} C^0 [_{IP} \underbrace{\text{Subject}}_{\downarrow \text{generic}} \text{ ja doch } [_{VP} \underbrace{\text{Subject}}_{\downarrow \text{existential}} \dots V^0] I^0]]$$

Thus, if Diesing's (1992) analysis is on the right track, the obligatory generic reading in (48-a) suggests that subjects do not have to move to [Spec, IP] but can stay in the verbal domain in German.

Another phenomenon that suggests that a subject can stay in [Spec, *v*P] in German is that in expletive constructions and the so-called impersonal passives, an expletive must appear in a pre-verbal position, but it cannot appear in a post-verbal position in the main clause in German.⁸

⁸Contrasted to the cases in (50) and (51), a sentence with a weather verb requires *es* even in the post-verbal position.

- (i) a. *(Es) schneit heute.
 it snows today
 'it snows today'
- b. Heute schneit *(es).
 today snows it
 'Today, it snows.'
- (a-b, Biberauer 2004:19)

This is because *es* in the above examples is not a pure expletive, but a quasi-argument, which is required by a weather predicate.

(50) *Expletive constructions*

- a. *(Es) kam gestern ein Junge.
it came yesterday a boy
'A boy came yesterday.'
- b. Gestern kam (*es) ein Junge.
yesterday came it a boy
'Yesterday, a boy came.' (a-b, Biberauer 2004:20)
- c. Warum ist (*es) ein Junge gekommen?
why is it a boy come
'Why did a boy come?' (Vikner 1995:185)

(51) *Impersonal passive*

- a. *(Es) wurde getanzt.
it became danced
'There was dancing.' 'People were dancing.'
- b. Gestern wurde (*es) getanzt.
yesterday became it danced
'Yesterday, there was dancing.' 'Yesterday, people were dancing.'
(a-d, Biberauer 2004:20)

The absence of a post-verbal expletive in the above examples suggests that the post-verbal position does not have an EPP requirement in the main clause in German.⁹ Note that the [Spec, IP] position is post-verbal in the main clause in German because of the obligatory verb movement to C⁰. Thus, no EPP requirement in the post-verbal position means that [Spec, IP] has no obligatory EPP requirement or [Spec, IP] does

⁹As well as in the matrix clause, the [Spec, IP] position in the embedded clause is exempted from an EPP requirement.

- (i) ... daß (*es) getanzt wurde.
... that it danced was
'... that there was dancing.' '... that people were dancing.' (Mohr 2005:119)

not have to be occupied by a phonologically overt element in German.¹⁰

$$(52) \quad [_{CP} XP C^0 [_{IP} \text{ — } [_{vP} . . . v^0] I^0]]$$

Note that although [Spec, IP] does not have an obligatory EPP requirement, the example (48-a), if Diesing's (1992) analysis is correct, suggests that a subject be in a domain of IP (or outside of [*v*P]). One possible way to explain this is to assume that an EPP feature on I^0 is optional and I^0 can have an EPP feature only if it

¹⁰One possible way to capture this property is to assume that whether I^0 has an EPP feature or not is parameterized, and I^0 in German has no EPP features. Another possibility is that assuming that EPP is universal and an EPP-feature can be satisfied by a phonologically null element or can be satisfied derivationally, it is satisfied by a null expletive *pro* as illustrated in (i-a) or by a fronted XP's dropping by [Spec, IP] on the way to [Spec, CP] as illustrated in (i-b).

- (i) a. $[_{CP} XP C^0 [_{IP} pro [_{vP} Subject . . . v^0] I^0]$
 b. $[_{CP} XP_i C^0 [_{IP} t_i [_{vP} Subject . . . v^0] I^0]$

The third possibility is, as proposed in Biberauer 2004, that [Spec, IP] is occupied by a moved *v*P, by which the EPP is satisfied.

$$(ii) \quad [_{CP} XP C^0 [_{IP} \underbrace{[_{vP} (Subject) . . . v^0]_i}_{\uparrow} [t_i] I^0]$$

However, such a movement of *v*P to [Spec, IP] is disallowed by the anti-locality condition. Thus, in order to maintain the analysis, we need to assume either that there is a projection between *v*P and IP or that a maximal projection smaller than *v*P moves to [Spec, IP], though in the latter case it is hard to explain the word order in German.

I do not discuss here which analysis should be adopted. Note, however, that in any possibility a subject remains in [Spec, *v*P] when an XP other than the subject is fronted, which is sufficient for my analysis.

Thus, given the two possible analyses, a subject can either stay in [Spec, *v*P] or optionally move to the domain of IP even though the EPP requirement on I^0 is not obligatory in German.

Another piece of evidence suggesting that a subject can stay in [Spec, *v*P] in German is an absence of superiority effects in German. That is, if a subject can stay in [Spec, *v*P] in German, a subject should not be an intervener for object movement to [Spec, CP]. This is because as illustrated in (55), a subject in [Spec, *v*P] is not an intervener for an object's movement to the *v*P-edge position because the two positions are within the same minimal domain, and also the subj_{*i*} is not an intervener for the object's movement from the *v*P-edge position to [Spec, CP] because the subject does not intervene between the two position.

- (55) a. $[_{vP} \text{Obj}_i [\text{Subj } [_{VP} t_i V]]]$
 ↑
 b. $[_{CP} \text{Obj}_i [_{IP} [_{vP} t'_i [\text{Subj } [_{VP} t_i V]]]]]$
 ↑

Then, it is predicted that there should be no superiority effects between a subject and an object in object fronting in German. As shown by the sentence (56), the prediction is borne out.

- (56) was hat wer gesagt?
 what has who said
 'who said what' (Haider 1986)

Thus, the absence of superiority effects is compatible with the assumption that a subject can stay in [Spec, *v*P] in German.

From these observations, I conclude that a subject can be in [Spec, *vP*] in German. Now, given this conclusion, it is possible to explain, under the analysis proposed in this thesis, why WCO effects are absent in object fronting in German.

- (57) Wen_{1i} liebt [seine₁ Mutter] t_i?
 who.ACC loves his mother.NOM
 ‘Who₁ does his₁ mother love?’

A possible derivation for the sentence (57) is given in (58).

- (58) a. [_{VP} wen- ϕ, Case [seine Nutter- ϕ, Case [_{VP} wen- ϕ, Case liebt] love- v^0]]
b. [_{IP} [_{VP} wen- ϕ, Case [seine Nutter- ϕ, Case [_{VP} wen- ϕ, Case liebt] liebt- v^0]] liebt- v^0 - I^0]
c. [_{CP} wen- ϕ, Case liebt- v^0 - I^0 - C^0 [_{IP} [_{VP} wen- ϕ, Case [seine Nutter- ϕ, Case [_{VP} wen- ϕ, Case liebt] liebt- v^0]] liebt- v^0 - I^0]]

As in (58-a), the object wh-phrase *wen* ‘who’ moves to a *v*P-edge position. This movement can involve pied-piping of ϕ -features to the landing site because the subject *seine Mutter* ‘his mother’ and the landing site are equidistant from *wen*’s pre-movement position. Then, after I^0 merges to the *v*P, nominative Case checking takes place without movement of the subject since I^0 has no EPP feature, as illustrated in (58-b). finally, as in (58-c), *wen* undergoes wh-movement to [Spec, CP] pied-piping its ϕ -features to the landing site. This pied-piping is possible because there are no intervening ϕ -features. Therefore, the LF-structure, where the condition on variable binding applies is as in the following.

$$(59) \quad \left[\text{CP } \overbrace{\text{wen}_1 - \phi, \text{Case}}^{\text{ } } \text{liebt-}v^0\text{-I}^0\text{-C}^0 \left[\text{IP } \left[\text{vP } \overbrace{\text{wen}_1 - \phi, \text{Case}}^{\text{ } } \left[\text{seine}_1 \text{ Nutter-} \phi, \text{Case} \left[\text{VP } \text{wen}_1 - \phi, \text{Case} \text{liebt} \right] \text{liebt-}v^0 \right] \right] \text{liebt-}v^0\text{-I}^0 \right] \right]$$

In the LF structure, a copy of *wen* ‘who’ that is available for binding/interpretation in [Spec, CP] or the *vP*-edge position c-commands a copy of the bound variable *seine* ‘his’. Thus the German sentence (57) allows a bound variable reading.¹¹

To summarize so far, German lacks WCO effects in object fronting. I proposed that this is because a subject can stay in *vP* in German, due to which, (an element inside) the subject can be bound at [Spec, *vP*].

Let us, now, look at other Germanic languages. As observed in Richards (2000), a bound variable reading is possible in object fronting in Icelandic (though it is slightly degraded).

¹¹While scrambling can feed variable binding, it cannot feed anaphor binding in German.

- (i) a. *weil [die Lehrer von sich₁] zweifellos [den Studenten]₁ in guter Erinnerung
 since the teacher of himself undoubtedly the student in good memory
 behalten haben.
 kept have
 Intended: ‘since the teacher of himself₁ have undoubtedly kept [the student] in good memory.’
- b. weil [den Studenten]_{1*i*} [die Lehrer von sich₁] zweifellos *t_i* in guter Erinnerung
 since the student the teacher of himself undoubtedly in good memory
 behalten haben.
 kept have
 Intended: ‘since the teacher of himself₁ have undoubtedly kept [the student] in good memory.’ (Grewendorf and Sabel 1999:9)

At this point, I have no idea about how the contrast can be derived under the current approach.

(60) *Absence of WCO effects in object fronting in Icelandic*

- a. *foreldrar hans₁ kenna sérhverjum strák₁ að keyra.
 parents his teach every-ACC boy-ACC COMP drive.INF
 Intended: ‘His₁ parents teach every boy₁ how to drive.’
- b. ?sérhverjum strák₁ kenna foreldrar hans₁ að keyra.
 every-ACC boy-ACC teach parents his COMP drive.INF
 ‘Every boy₁, his₁ parents teach how to drive.’ (Richards 1996:40)

Note that as in German, a post-verbal expletive is disallowed in Icelandic.

(61) *Distribution of expletives in Icelandic*

- a. það hefur komið strákur.
 it has come boy
 ‘A boy came’
- b. í-gær hefur (*það) komið strákur.
 Yesterday has it come boy
 ‘Yesterday, a boy came.’
- c. það hefur verið dansað.
 it has been danced
 ‘There was dancing.’ ‘People were dancing.’
- d. í-gær hefur (*það) verið dansað.
 yesterday has it been danced
 ‘Yesterday, there was dancing.’ ‘Yesterday, people were dancing.’

(a-d, Biberauer 2004:20)

If the absence of a post-verbal expletive is related to the absence of an EPP feature on I⁰, the absence (or very weak) WCO effects in Icelandic can be explained in the same way as in German. That is, a bound variable reading is possible in object fronting in Icelandic because the subject can be in [Spec, *v*P], which makes it possible

that a bound pronoun inside the subject is bound in the position.¹²

Contrasted to Icelandic, mainland Scandinavian languages obligate a post-verbal expletive, as well as pre-verbal one (Biberauer 2004, Mohr 2005). As exemplified in the Norwegian examples, a sentence becomes unacceptable if the post-verbal expletive is dropped.

(62) *Distribution of expletives in Norwegian*

- a. der er kommet en dreng.
 there is come a boy
 ‘A boy came’

¹²Another piece of evidence that supports this analysis is that Icelandic, like German, shows no Superiority effects, (though Grebenyova (2004) reports that single-pair reading is strongly preferred to pair-list reading in (i-b)).

- (i) a. Hver bauð hverjum í veisluna?
 who invited whom in the-dinner
 ‘Who invited who to the dinner?’
 b. Hverjum bauð hver í veisluna?
 whom invited who in the-dinner
 ‘Who invited who to the dinner?’ (Grebenyova 2004:27)

Moreover, as shown in raising constructions in Icelandic, a raising subject does not have to undergo raising to a subject position even without an expletive in the position.

- (ii) a. Hverjum hefur Ólafur virst vera gáfaður?
 who.DAT has Olaf.NOM seemed be intelligent
 ‘To whom has Olaf seemed be intelligent?’
 b. Hverjum hefur virst Ólafur vera gáfaður?
 who.DAT has seemed Olaf.NOM be intelligent
 ‘To whom has Olaf seemed be intelligent?’ (Holmberg and Hróarsdóttir 2003:1016)

In the example (iib), a subject position, which is supposed to [Spec, IP], is not occupied by anything, which suggests that an EPP requirement is not obligatory in Icelandic.

- b. igår er *(der) kommet en dreng.
 yesterday is there come a boy
 'Yesterday, a boy came.'
- c. der er blevet danset.
 there is been danced
 'There was dancing.' 'People were dancing.'
- d. igår er *(der) blevet danset.
 yesterday is there been danced
 'Yesterday, there was dancing.' 'Yesterday, people were dancing.'
- (a-d, Biberauer 2004:19-20)

The obligatory presence of an expletive in the post-verbal position suggests that [Spec, IP] must have an EPP property in the mainland Scandinavian languages. Thus, under the proposed analysis, it is predicted that object fronting induces WCO effects in the mainland Scandinavian languages, as in English, since a fronted object cannot pied-pipe its ϕ -features to [Spec, CP] and a subject must be interpreted at [Spec, IP], so there is no chance for an available copy of the object to bind into an available copy of the subject at LF.

$$(63) \quad [_{CP} \text{Obj-} C^0 [_{IP} \text{Subj-}\phi, \text{Case} I^0\text{-EPP} [_{vP} \text{Obj-}\phi [\text{Subj-}\phi, \text{Case} [_{VP} \dots]]]]]$$

↑
*pied-piping of ϕ

$$(64) \quad \text{LF: } [_{CP} \text{Obj-} C^0 [_{IP} \text{Subj-}\phi, \text{Case} I^0\text{-EPP} [_{vP} \text{Obj-}\phi [\text{Subj-}\phi, \text{Case} [_{VP} \dots]]]]]$$

The prediction is borne out. As exemplified in (65) and (66), WCO effects are observed in Norwegian and in Swedish. As shown in (65) in Norwegian, the sentence *Hvem elsker sin more* is ambiguous in that the first noun *hvem* 'who' can be interpreted as a subject or as an object. As in the example (65-b), however, no

bound variable reading is available when it is interpreted as an object.^{13,14} As in Norwegian, a bound variable reading is hard to get even with a D-linked wh-phrase when an object moves across a subject in Swedish, as shown in (66).

(65) *Norwegian*

- a. Hvem₁ elsker sin₁ mor?
 who loves SIN mother
 ‘Who₁ loves his₁ mother?’
- b. *Hvem_{1*i*} elsker sin₁ mor t_i?
 who loves SIN mother
 Intended: ‘Who₁ does his₁ mother love?’ (Terje Lohndal, p.c.)

(66) ??Vilket fordon_{1*i*} hade dess₁ ägare inte tvättat t_i på ett helt år.
 which vehicle had its owner not washed for a whole year
 Intended: ‘Which vehicle₁ did its₁ owner not wash for a whole year?’
 (*Swedish*: Platzack 1998:66)

¹³I would like to thank Terje Lohndal for providing the Norwegian data.

¹⁴The possessive pronoun *hans* ‘his’ is not a bound pronoun in Norwegian. As shown in (i) and

(ii), it cannot be interpreted as a bound variable even in a non-WCO configuration.

(i) *Norwegian*

- a. Hvem₁ elsker hans_{*1/2} mor?
 who loves his mother
 ‘Who₁ loves his_{*1/2} mother?’
- b. Hvem_{1*i*} elsker hans_{*1/2} mor t_i?
 who loves his mother
 ‘Who₁ does his_{*1/2} mother love?’
- c. Hver eneste gutt₁ liker jakken hans_{*1/2}.
 each every boy likes the.jacket his
 ‘Every boy₁ likes his_{*1/2} jacket.’ (a-b, Terje Lohndal, p.c.)

Thus, under the present analysis, the cross-linguistic difference in presence/absence of WCO effects between German/Icelandic and the mainland Scandinavian languages can be attributed to whether an EPP requirement of I^0 is obligatory or not.

In summary, German and Icelandic, compared to the mainland Scandinavian languages, do not show WCO effects in object fronting. I showed in this section that the absence of WCO effects in the languages can be explained under our analysis given that I^0 does not have an EPP requirement in the languages.

(67)

	EPP on I^0	WCO in object fronting
German/Icelandic		
English/mainland Scandinavian	✓	✓

5.3.2 Absence of WCO effects in Japanese-type languages

In the previous subsection, I argued that the presence of the EPP requirement on I^0 is a necessary property for inducing WCO effects in object fronting, and German and Icelandic, which lack this property, are exempted from WCO effects. Another property relevant to WCO effects, as discussed in Section 5.3, is that wh-movement targets the [Spec, CP] position. That is, as illustrated in (68), (ϕ -features of) subjects are interveners for objects' pied-piping its ϕ -features to the landing site

if the subject is in [Spec, IP] and the object's landing site is [Spec, CP] because [Spec, IP] and [Spec, CP] are in different minimal domains and a subject in [Spec, IP] is closer to the object's pre-movement position. Thus, if the subject must be interpreted at [Spec, IP], the subject can never be bound by the object.

- (68) a. $[_{CP} \text{Obj-} C^0 [_{IP} \text{Subj-}\phi, \text{Case } I^0\text{-EPP } [_{vP} \text{Obj-}\phi [\text{Subj-}\phi, \text{Case } [_{VP} \dots]]]]]$
↑
*pied-piping of ϕ
- b. *bind
↓
 LF: $[_{CP} \text{Obj-} C^0 [_{IP} \text{Subj-}\phi, \text{Case } I^0\text{-EPP } [_{vP} \text{Obj-}\phi [\text{Subj-}\phi, \text{Case } [_{VP} \dots]]]]]$

If, a fronted object does not move to [Spec, CP], but to an IP-adjoined position, the object can pied-pipe its ϕ -features to the landing site because the subject position [Spec, IP] and the IP-adjoined position are within the same minimal domain and equidistant from the vP -edge position.

- (69) a. $[_{IP} \text{Obj-}\phi [_{IP} \text{Subj-}\phi, \text{Case } I^0\text{-EPP } [_{vP} \text{Obj-}\phi [\text{Subj-}\phi, \text{Case } [_{VP} \dots]]]]]$
↑
✓ pied-piping of ϕ
- b. ✓ bind
↓
 LF: $[_{IP} \text{Obj-}\phi [_{IP} \text{Subj-}\phi, \text{Case } I^0\text{-EPP } [_{vP} \text{Obj-}\phi [\text{Subj-}\phi, \text{Case } [_{VP} \dots]]]]]$

In this subsection, I show that some languages that allow in-situ wh-phrases and scrambling, like Japanese, are exempted from WCO effects in object fronting. The absence of WCO effects in these languages can be explained provided that a fronted object can be in an IP-adjoined position in these languages.

Let us, first, look at languages, other than German and Icelandic, in which no WCO effects are observed in object fronting. As shown in the following, Japanese, Korean, Turkish, Hindi, Tamil and Telugu have such a property.

(70) *Japanese*

- a. *[Soitu₁-no hahaoya]-ga **dare₁-o** aisiteiru no?
 the.person-GEN mother-NOM who-ACC love Q
 Intended: ‘Who₁ does his₁ mother love?’
- b. **Dare₁-o_i** [soitu₁-no hahaoya]-ga t_i aisiteiru no?
 who-ACC the.person-GEN mother-NOM love Q
 ‘Who₁ does his₁ mother love?’

(71) *Korean*

- a. *cakii(kui)₁-uy pwumo-cocha **nwukwu₁-luli** miwueha-ni?
 self-GEN parent-even who-ACC hate-Q
 Intended: ‘Who₁ do even his₁ parents hate?’
- b. **nwukwu₁-luli_i** cakii(kui)₁-uy pwumo-cocha t_i miwueha-ni?
 who-ACC self-GEN parent-even hate-Q
 ‘Who₁ do even his₁ parents hate?’ (a-b, Lee 2006:436)

(72) *Turkish*¹⁵

- a. *Anne-si₁ **KİM-İ₁** ara-dı?
 mother-his who-ACC call-PAST
 Intended: ‘Who₁ did his₁ mother call?’
- b. **KİM-İ_{1i}** anne-si₁ t_i ara-dı?
 who-ACC mother-his call-PAST
 ‘Who₁ did his₁ mother call?’ (a-b, Göksel 2011:55)

¹⁵In Turkish, the possibility of binding between two elements varies depending on what discourse functions the elements have (Şener 2010). According to Şener (2010), however, in a configuration such as (72-b), a moved QP binds a bound variable inside a subject, “no matter what grammatical function the QP is and what discourse function the QP is mapped to.” (Şener 2010:84)

(73) *Hindi*

- a. *uskii₁ bahin **kisko**₁ pyaar kartii thii?
his sister who love does is
Intended: ‘Who₁ does his₁ sister love?’
- b. **kisko**_{1*i*} uskii₁ bahin t_i pyaar kartii thii
who his sister love does is
‘Who₁ does his₁ sister love?’ (a-b, Mahajan 1990:25-26)

(74) *Tamil*

- a. *Avanga₁ ammaavee **yaare**₁ verukraanga?
they-GEN mother who-ACC hate
Intended: ‘Who₁ does his₁ mother hate?’
- b. **Yaare**_{1*i*} avanga₁ ammaavee t_i verukraanga?
who-ACC they-GEN mother hate
‘who₁ does his₁ mother hate?’ (Annamalai 2003:37)

(75) *Telugu*

- a. *vaani₁ talli **evarini**₁ preemistundi?
his mother whom loves
Intended: ‘who does his mother loves?’
- b. **evarini**_{1*i*} vaani₁ talli t_i preemistundi?
whom his mother loves
‘Who does his mother love?’ (Vijayasri 2003:77-78)

Note that these languages allow *wh*-in-situ: As shown in the following, an object *wh*-phrase does not have to be preposed and can stay in the canonical object position.

(76) *Wh-in-situ*

- a. John-wa **nani-o** katta-no?
John-TOP what-ACC bought-Q
‘What did John buy?’ (*Japanese*)

- b. Suna-ka **muôs-ûl** sass-ni?
 Sun-NOM what-ACC bought-Q
 ‘What did Suna buy?’ (Korean: Beck and Kim 1997:339)
- c. Pelin **kim-i** öptü?
 Pelin.NOM who-ACC kissed
 ‘Who did Pelin kiss?’ (Turkish: Şener 2010:155)
- d. raam-ne **kyaa ciiz** khaaii?
 Ram-ERG what thing.ABS ate
 ‘What did Ram eat?’ (Hindi: Mahajan 1990:20)
- e. kumaar **yaare** vara connaan?
 Kumar who.ACC come.INF said
 ‘Whom did Kumar ask to come?’ (Tamil: Annamalai 2003:6)
- f. sætyəmən̩i **yɛ:wari-ki** ti: ičçindi?
 Satyamani who-DAT tea gave
 ‘Who did Satyamani give tea to?’ (Telugu: Davis 2005:19)

The absence of wh-movement in the examples (76) suggests that wh-phrases do not have to be in [Spec, CP] in these languages. Thus, it is possible that the fronted object wh-phrase that binds a bound pronoun in the b-examples in (70)-(75) does not undergo wh-movement and is not in [Spec, CP]. Then, the question arises here as (i) how the object wh-phrase is fronted in (70)-(75) and (ii) where the target position is. As for the answer of the first question, these languages have so-called “scrambling”, by which a (relatively) free word order is allowed.¹⁶

¹⁶Even in English, which does not have scrambling, the OSV word order in addition to the SVO order is allowed because of Topicalization, as exemplified in (i).

(i) This book, John bought yesterday.

Note. however, scrambling is different from Topicalization, which I briefly discuss in the next chapter.

(77) *Japanese*

- a. (kinoo) John-ga (kinoo) Mary-ni (kinoo) atta.
yesterday John-NOM yesterday Mary-DAT met
'John met Mary yesterday.' (SOV)
- b. (kinoo) Mary-ni (kinoo) John-ga (kinoo) atta.
yesterday Mary-DAT yesterday John-NOM yesterday met (OSV)

(78) *Korean*

- a. Chelswu-ka chyak-ul ilknunta.
Chelswu-NOM book-ACC read
'Chelswu reads a book' (SOV)
- b. Chelswu-ka chyak-ul ilknunta.
book-ACC Chelswu-NOM read
'Chelswu reads a book' (OSV) (Lee 2007:12)

(79) *Turkish*¹⁷

- a. cadı hırsız-ı lanetle-di.
witch-NOM thief-ACC curse-PAST
'The witch cursed the thief.' (SOV)
- b. Cadı lanetle-di hırsız-ı.
witch-NOM curse-PAST thief-ACC (SVO)
- c. hırsız-ı cadı lanetle-di.
thief-ACC witch-NOM curse-PAST (OSV)
- d. hırsız-ı lanetle-di cadı.
thief-ACC curse-PAST witch-NOM (OVS)
- e. lanetle-di cadı hırsız-ı.
curse-PAST witch-NOM thief-ACC (VSO)
- f. lanetle-di hırsız-ı cadı.
curse-PAST thief-ACC witch-NOM (VOS)
- (a-f, Şener 2010:10)

¹⁷As discussed in Şener 2010, although all of the following word orders are grammatically well-formed, which one to use is contextually determined.

(80) *Hindi*

- a. raam-ne kelaā khaayaa.
Ram-ERG banana.ABS ate
'Ram ate a banana.' (SOV)
- b. raam-ne khaayaa kelaā.
Ram-ERG ate banana.ABS (SVO)
- c. kelaā raam-ne khaayaa.
banana-ABS Ram-ERG ate (OSV)
- d. kelaā khaayaa raam-ne.
banana.ABS ate Ram-ERG (OVS)
- e. khaayaa raam-ne kelaā.
ate Ram-ERG banana.ABS (VSO)
- f. khaayaa kelaā raam-ne.
ate banana.ABS Ram-ERG (VOS) (a-f, Mahajan 1990:20)

(81) *Tamil*

- a. shakuni dharmaa-kku daayatt-ai koDuttaan.
Shakuni.NOM Dharmna-DAT dice-ACC gave
'Shakuni gave the dice to Dharma.' (S IO DO V)
- b. dharmaa-kku shakuni daayatt-ai koDuttaan.
Dharmna-DAT Shakuni.NOM dice-ACC gave (IO S DO V)
- c. daayatt-ai shakuni dharmaa-kku koDuttaan.
dice-ACC Shakuni.NOM Dharmna-DAT gave (DO S IO V)
- d. shakuni dharmaa-kku koDuttaan daayatt-ai .
Shakuni.NOM Dharmna-DAT gave dice-ACC (S IO V DO)
- e. daayatt-ai shakuni koDuttaan dharmaa-kku.
dice-ACC Shakuni.NOM gave Dharmna-DAT (DO S V IO)
- f. daayatt-ai dharmaa-kku koDuttaan shakuni.
dice-ACC Dharmna-DAT gave Shakuni.NOM (DO S IO V)
(a-f, Sarma 2003:238-239)

(82) *Telugu*

- a. sətyəməɳi na:-ku ti: ičçindi.
Satyamani I-DAT tea gave
'Satyamani give me tea.' (S IO DO V)
- b. sətyəməɳi ti: na:-ku ičçindi.
Satyamani I-DAT tea gave (S DO IO V)
- c. na:-ku ti: sətyəməɳi ičçindi.
I-DAT tea Satyamani gave (IO DO S V)
- d. sətyəməɳi *pro* ičçindi na:-ku.
Satyamani gave I-DAT (S (DO) V IO)
- e. sətyəməɳi *pro* ičçindi ti:.
Satyamani I-DAT tea gave (S (IO) V DO) (a-e, Davis 2005:18-20)
- f. sarita-ki kumaar ninna aa pustakam iccaaDu.
Sarita-DAT Kumar.NOM yesterday that book gave
'Kumar gave Sarita that book yesterday.' (IO S DO V)
- g. aa pustakam kumaar sarita-ki ninna iccaaDu.
that book Kumar.NOM Sarita-DAT yesterday gave
(DO S IO V) (f-g, Haddad 2009:71)

Thus, an object wh-phrase, even though it can stay in-situ, can be fronted via scrambling in these languages.

- (83) a. [Subj Obj V]
b. [Obj [Subj Obj V]]
 ↑
 Scrambling

As for the second question, I argue in Section 6.3.4 that (Japanese) scrambling targets an adjoined position. Assuming that scrambling in the other languages can target an adjoined position, the fronted object in the b-examples in (70)-(75) can

be in an IP-adjoined position.¹⁸

$$(84) \quad [\text{IP} \text{ Obj} [\text{IP} \text{ Subj} \text{ Obj} \text{ V}]]$$

\uparrow
 Scrambling

Given this, it is possible to explain why the languages under discussion are exempted from WCO effects in object fronting. That is, as illustrated in (85), given that an object wh-phrase can move to an IP-adjoined position via scrambling, it can carry its ϕ -features to the landing site because an adjoined position and Specifier position of the same Head are in the same minimal domain so ϕ -features of the subject in [Spec, IP] are not interveners for the pied-piping. Thus, the object can bind the subject by the copy of the object in the IP-adjoined position's c-commanding the copy of the subject in [Spec, IP] at LF.

$$(85) \quad \text{a. } [\text{IP} \text{ Obj-}\phi [\text{IP} \text{ Subj-}\phi, \text{Case I}^0\text{-EPP } [_v\text{P} \text{ Obj-}\phi [\text{Subj-}\phi, \text{Case } [_v\text{P} \dots]]]]]$$

\uparrow
 \checkmark pied-piping of ϕ

b. \checkmark bind
 \downarrow
 LF: $[\text{IP} \text{ Obj-}\phi [\text{IP} \text{ Subj-}\phi, \text{Case I}^0\text{-EPP } [_v\text{P} \text{ Obj-}\phi [\text{Subj-}\phi, \text{Case } [_v\text{P} \dots]]]]]$

To sum up this subsection, I showed that some languages with wh-in-situ and scrambling, like Japanese, do not show WCO effects when a quantificational object

¹⁸Although the free word order phenomenon is usually attributed to scrambling and the listed languages are supposed to have scrambling in previous literature, the so-called “scrambling” operation may differ among the languages. Thus, a more detailed investigation is required to show that a fronted object wh-phrase in (70)-(75) can really be in an IP-adjoined position.

moves across a subject containing a bound pronoun. The lack of WCO effects can be explained under the proposed analysis given that the fronted object wh-phrase moves to an IP-adjoined position via scrambling in the WCO-free sentences in these languages.

5.3.3 Absence of WCO effects in Hungarian-type languages

In the previous section, I argued that a language is exempted from WCO effects in object fronting if an object wh-phrase moves to an IP-adjoined position. In this section, I will discuss presence/absence of WCO effects in multiple wh-movement languages. Assuming with Richards (1997) that the landing site of fronted multiple wh-phrases can be an IP-adjoined position in some languages, I argue that such languages are exempted from WCO effects.

As shown in the following, multiple wh-phrases undergo wh-fronting in Romanian, Bulgarian, Serbo-Croatian, Polish and Hungarian.¹⁹

- (86) a. Cine cu ce merge?
 who with what goes
 ‘Who goes with what?’ (*Romanian*)
- b. Koj kogo vižda?
 who whom sees
 ‘Who sees whom?’ (*Bulgarian*)

¹⁹In Hungarian, all wh-phrases obligatorily move to a preverbal position, but the position does not have to be the beginning of the sentence.

- (i) Mari kinek mit adotteel.
 mary who.DAT what.ACC sold
 ‘What did Mary sell to whom?’ (Richards 1997:48)

- c. Ko koga vidi?
who whom sees
'Who sees whom?' (*Serbo-Croatian*)
- d. Kto co robit?
who what did
'Who did what?' (*Polish*) (a-d, Rudin 1988:449)
- e. Ki mit mondott?
who what said
'Who said what?' (*Hungarian*: Kiss 2002:103)

Among these languages, Romanian and Bulgarian show WCO effects in object fronting, while the other languages do not, as shown in the following.

(87) *Language with WCO effects*

- a. *Pe cine_{1i} iubeste mama lui₁ t_i ?
PE who loves.3SG.PR mother-the his
Intended: 'Whom₁ does his₁ mother love?' (*Romanian*: Alboiu 2002:217)
- b. *Kogo_{1i} obiça majka sui₁ t_i?
who loves mother his
Intended: 'Who₁ does his₁ mother love?' (*Bulgarian*: Richards 1997:32)

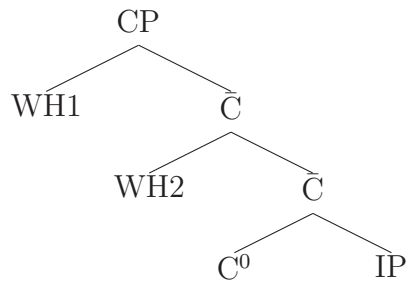
(88) *Language without WCO effects*

- a. Kit_{1i} látott az pro₁ anyja t_i?
who-ACC see.PAST.3SG the mother-NOM
'Who₁ did his₁ mother see?' (*Hungarian*: Richard 1997:33)
- b. Koga_{1i} voli njegova₁ majka t_i?
who loves his-NOM mother-NOM
'Who₁ does his₁ mother love?' (*Serbo-Croatian*: Richard 1997:33)
- c. Kogo_{1i} jego₁ przyjaciele podziwiają t_i ?
who his friends admire
'Who₁ does his₁ friend admire' (*Polish*: Szczegielniak 2001:141)

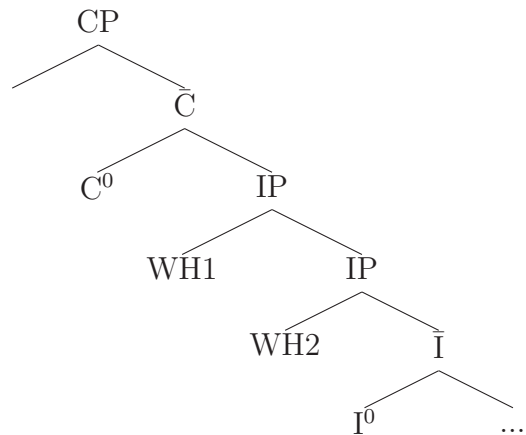
Now the question arises as what is the parametric difference between the two types

of languages. For the answer to this question, I assume with Richards (1997) that the former type of languages are CP-absorption languages, while the latter type of languages are IP-absorption languages. According to Richards (1997), in CP-absorption languages, wh-fronting targets (multiple) [Spec, CP] positions. In IP-absorption languages, on the other hand, the languages do not allow multiple-Specs in CP, and wh-fronting can target (multiple) IP-adjoined positions.²⁰

- (89) a. *CP-absorption language* (Bulgarian, Romanian)



- b. *IP-absorption language* (Serbo-Croatian, Hungarian, Polish)



²⁰In IP-absorption languages, one [Spec, CP] position is available, so wh-movement of only one element can target this position.

One piece of evidence for this analysis is that Bulgarian and Romanian, which are supposed to be CP-absorption languages show Superiority effects, while the other languages (excepting Hungarian) do not show Superiority.

(90) *Bulgarian*

- a. Koj kogo vižda?
who whom sees
'Who sees whom?'
- b. *Kogo koj vižda?
whom who sees (Rudin 1988:472-473)

(91) *Romanian*

- a. Cine ce a spus?
who what has said
'Who said what?'
- b. *Ce cine a spus?
what who has said (Rudin 1988:474)

(92) *Serbo-Croatian*

- a. Ko koga vidi?
who whom sees
'Who sees whom?'
- b. Koga ko vidi?
whom who sees (Rudin 1988:473)

(93) *Polish*

- a. Kto co robit?
who what did
'Who did what?'
- b. Co kto robit?
what who did (Rudin 1988:474)

(94) *Hungarian*²¹

²¹Although Hungarian shows a mild Superiority effect in the example, the language shows other properties characteristic to IP-absorption languages, because of which Richards (1997) classifies

- a. Ki mit mondott?
 who what said
 ‘Who said what?’
- b. ?Mit ki mondott?
 what who said (Kiss 2002:103)

Assuming that the first wh-phrase moves first in multiple wh-fronting languages, the presence of Superiority effects in Bulgarian and Romanian can be explained given that the two languages are CP-absorption languages. That is, wh-movement targets [Spec, CP] in CP-absorption languages, so if an object moves first, the subject in [Spec, IP] is an intervener for the movement of the object (or movement of wh-feature of the object).²²

$$(95) \quad [_{CP} \text{Obj-wh } C^0 [_{IP} \text{Subj-wh } [_{vP} \dots \text{Obj-wh} \dots]]]$$

↑
*

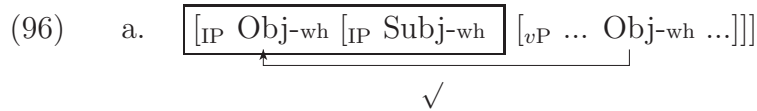
Thus, an object wh-phrase cannot precede a subject wh-phrase in these languages.

The absence of Superiority effects in Serbo-Croatian and Polish (and possibly Hungarian), on the other hand, can be explained given that the languages are IP-absorption languages. That is, since the movement of wh-phrase can target an IP-adjoined position in IP-absorption languages, the subject in [Spec, IP] and the landing site of the object are within the same minimal domain. Therefore, the

the language into IP-absorption languages. See Richards (1997), for details.

²²Given the theory of multiple Agree proposed by Hiraiwa 2005, it is possible that C^0 Agrees with the object across the subject if C^0 also Agrees with the subject at the same time. For another possible approach to account for the contrast in Superiority effects between the two types of languages, see Rudin (1988) and Richards (1997).

subject is not an intervener for the object's movement.²³



Thus, an object wh-phrase can precede a subject wh-phrase in these languages.²⁴

Now, given that Bulgarian and Romanian are CP-absorption languages, while Serbo-Croatian, Hungarian and Polish are IP-absorption, it is possible to derive the grammatical contrast between the two types of languages in WCO effects under the proposed analysis. That is, since an object wh-phrase moves to [Spec, CP] across the subject in [Spec, IP] in the former languages, it cannot pied-pipe its ϕ -features to the landing site. Then, given that only a copy with ϕ -features can be a binder,

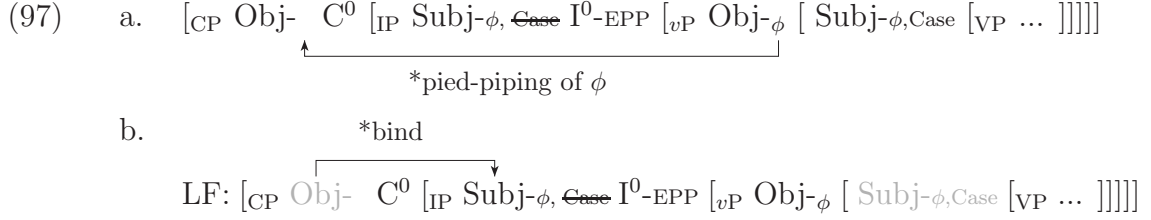
²³In Serbo-Croatian, contrasted to the case (92), Superiority effects arise if overt interrogative Complementizer *li* appears.

- (i) a. Ko li je koga istukao?
 who Q whom beaten
 'Who on the earth beat whom?'
 b. *Koga li je ko istukao?
 whom Qwho beaten
 Intended: 'Who on the earth beat whom?' (a-b, Bošković 1997a:15-16)

As discussed in Bošković (1997a), the fronted wh-phrase undergoes wh-movement to [Spec, CP] in this case. Therefore the sentence is ungrammatical as in Bulgarian and Romanian.

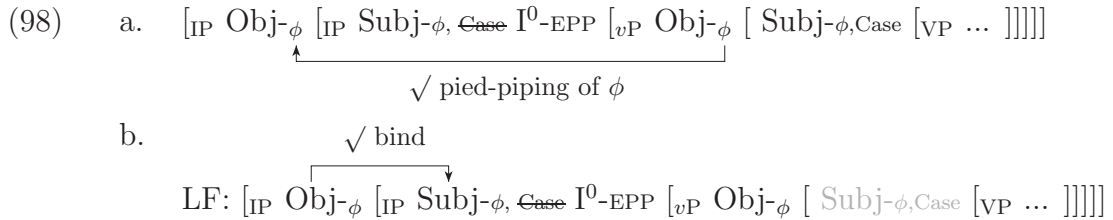
²⁴As shown in (92)-(94), a subject wh-phrase can precede an object wh-phrase in IP-absorption languages. Under the framework proposed in this thesis, movement from [Spec, IP] to an adjoined position to IP of the same Head is disallowed by the anti-locality condition on movement. Thus, in the case where a subject wh-phrase precedes an object wh-phrase, the subject moves to [Spec, CP] and the object moves to an IP-adjoined position.

the copy of the object in [Spec, CP] is unavailable for binding into the subject in [Spec, IP].



That is why a bound variable reading is impossible in object fronting in the languages.²⁵

In Serbo-Croatian, Hungarian and Polish, on the other hand, since an object wh-phrase moves to an IP-adjoined position, it can pied-pipe its ϕ -features to the landing site because the subject in [Spec, IP] and the landing site are within the same minimal domain. Therefore, the copy of the object in the IP-adjoined position is available for binding. Because it c-commands the copy of the subject in [Spec, IP], a bound pronoun inside the subject can be licensed.



That is why, no WCO effects are observed in these languages.²⁶

²⁵Although, in order to account for the ungrammaticality of the Bulgarian and Romanian cases, it is required to show that the subject must be in [Spec, IP] in these languages, I stipulate that the subject in the unacceptable examples is in [Spec, IP].

²⁶Rudin (1988) and Richards (1997) argue that one wh-phrase has to move from an IP-adjoined

Thus, the presence of WCO effects in Bulgarian and Romanian and the absence of them in Serbo-Croatian, Hungarian and Polish can be accounted for under the position to [Spec, CP] position in Serbo-Croatian. If this is on the right track, however, there is an issue under the analysis proposed in this thesis because movement from an IP-adjoined position to the next higher [Spec, CP] is disallowed because of the anti-locality condition on movement.

One motivation for the assumption is that all clitics appear in a clause-second position in Serbo-Croatian.

- (i) a. **Ko je što kome** dao?
 who has what to.whom given
 ‘Who gave what to him?’
- b. ***Ko što je kome** dao?
 who what has to.whom given
- c. ***Ko što kome je** dao?
 who what to.whom has given (Rudin 1988:462)

Given this fact, Rudin (1988) argues that the first wh-phrase is in [Spec, CP] separated from the other ones in the domain of IP.

- (ii) [CP WH1 clitic [IP WH WH ...]]

Note, however, that for the second position clitics in Serbo-Croatian, Schütze (1994) argues that the position of clitics is subject to purely phonological constraints, suggesting that clitics are in the domain of CP at S-structure and XP-movement to [Spec, CP] or X⁰-movement to C⁰ can take place to host the clitics but these movements are not obligatory. Given this, the second position clitics are not evidence for the claim that the first wh-phrase is in [Spec, CP].

Another motivation for the assumption that one wh-phrase must move to [Spec, CP] in Serbo-Croatian is that Serbo-Croatian shows wh-island effects. Rudin (1988) and Richards (1997) argue that if all wh-phrases can be in the domain of IP, a fronted wh-phrase can stop by [Spec, CP] on the way to the matrix clause, by which wh-island effects could be evaded as illustrated in (iii-b). Therefore the presence of wh-island effects as shown in (iii-a) suggests that one wh-phrase must

proposed analysis.

5.4 Conclusion

In this chapter I discussed cross-linguistic differences in presence/absence of WCO effects in object fronting. Following the proposed analysis, it is predicted that a language is exempted from WCO effects if (i) it does not have to have an EPP property or (ii) wh-movement can target IP-adjoined position, because in either case, an object wh-phrase can pied-pipe its ϕ -features to the position that c-commands the subject whose Case is already checked.

occupy [Spec, CP] as illustrated in (iii-c).

- (iii) a. ***Šta** si me pitao **ko** može da uradi?
 what have me asked who can to do
 Intended: ‘What did you ask me who can do?’ (Rudin 1988:459)
- b. [CP WH2_i ... [CP t_i [IP WH1 . . . t_i]]]
- c. *[CP WH2_i ... [CP WH1 [IP . . . t_i]]]

With regard to this matter, Bošković (1997) shows that Superiority effects are observed in embedded questions in Serbo-Croatian.

- (iv) a. Jovan i Marko ne znaju **ko** je **koga** istukao.
 Jovan and Marko not know who is whom beaten
 ‘Jovan and Marko do not know who beat whom.’
- b. ?*Jovan i Marko ne znaju **koga** je **ko** istukao.
 Jovan and Marko not know whom is who beaten (Bošković 1997a:7)

On the basis of this observation and the one in footnote 23 in this chapter, I assume that in Serbo-Croatian, wh-movement targets [Spec, CP] in the embedded questions and in the case where the overt Q-particle *li* appears.

- (99) a. \checkmark bind
- $$[\text{CP } \text{Obj-}\phi, \text{Case } C^0 [\text{IP } I^0 [\text{vP } \text{Obj-}\phi, \text{Case } [\text{Subj-}\phi, \text{Case } [\text{VP } \dots]]]]]]$$
- \checkmark pied-piping of ϕ
- b. \checkmark bind
- $$[\text{IP } \text{Obj-}\phi, \text{Case } [\text{IP } \text{Subj-}\phi, \text{Case } I^0\text{-EPP } [\text{vP } \text{Obj-}\phi, \text{Case } [\text{Subj-}\phi, \text{Case } [\text{VP } \dots]]]]]]$$
- \checkmark pied-piping of ϕ

I showed that the prediction is borne out in German, Icelandic, Japanese, Korean, Turkish, Hindi, Tamil, Telugu, Hungarian, Serbo-Croatian, and Polish; these languages are exempted from WCO effects in object fronting and have either/both of the two properties.

Before closing this chapter, let me point out the relation between the absence of WCO effects and the absence of Superiority effects. Hornstein (1995) proposes that Superiority effects can be subsumed under the conditions on WCO. Although the analysis proposed here and the one proposed in Hornstein (1995) are different, the underlying generalization derived from the two analyses is the same: If a certain construction of a language is exempted from WCO effects, the construction of the language is also exempted from Superiority effects. Under the proposed analysis, this is because WCO effects in object fronting are absent only if the subject is not an intervener for the object's movement (or pied-piping of its ϕ -features, to be exact), which means that there is no Superiority effect between a subject and an object in such a case.


Chapter 6: Scrambling and Variable Binding in Japanese

6.1 Overview

In Japanese, word order is relatively free as long as a verb appears at the end of the clause.

- (1) a. (kinoo) John-ga (kinoo) kono keeki-o (kinoo) tabeta.
yesterday John-NOM yesterday this cake-ACC yesterday ate
‘John ate this cake yesterday.’
- b. (kinoo) kono keeki-o (kinoo) John-ga (kinoo) tabeta.
yesterday this cake-ACC yesterday John-NOM yesterday ate
‘John ate this cake yesterday.’

In sentence (1-b), the object *kono keeki* “this cake” appears before the subject *John*. This order is assumed to be derived via scrambling, a notion of which is first introduced by Ross (1967). It has been generally assumed that scrambling operation is a kind of movement.¹

- (2) [[this cake]-ACC_{*i*} [John-NOM *t_i* ate]]
- 

¹Contrasted to this assumption, Kitagawa (1990) and Bošković and Takahashi (1998) argue that scrambling in Japanese involves base-generation of the scrambled element.

Note that Japanese scrambling is different from Topicalization, which is exemplified in (3-b). As in (3-b), in English, an object can appear at the front of the sentence via Topicalization.

- (3) a. John ate this cake.
 b. This cake_{*i*}, John ate *e_i*.

One may assume that the sentence in (1-b) involves Topicalization, by which the object *kono keeki* "this cake" moves to the front. Note, however, that the fronted object does not have a semantic function as Topic, contrasted to a Topic phrase that appears with a Topic marker *wa*.

- (4) (?kinoo) kono keeki-**wa** (kinoo) John-ga (kinoo) tabeta.
 yesterday this cake-TOP yesterday John-NOM yesterday ate.
 'As for this cake, John ate it (yesterday).'

That a scrambled element is different from a Topic is confirmed by the following example. As exemplified in (7), differently from the case of Topicalization as in (5) and (6), indefinite non-specific nouns, as well as definite nouns, can be fronted via scrambling.

- (5) *Someone_{*i*}, John hit *e_i*.
 (6) *Dareka-wa_{*i*} John-ga *e_i* nagutta.
 someone-TOP John-NOM hit
 Intended: 'As for someone, John hit him.'

- (7) Dareka-o_i John-ga t_i nagutta.
 someone-ACC John-NOM hit
 'John hit someone.'

Moreover, contrasted to English Topicalization, Japanese scrambling is insensitive to wh-islands.²

- (8) *This cake, John knows when Mary ate *e*.

- (9) Kono keeki-o_i, John-ga(\-wa) [Mary-ga t_i tabeta kadooka] sitteiru.
 this cake-ACC, John-NOM\ -TOP Mary-NOM ate whether know
 'John knows whether Mary ate this cake.'

Note that Japanese in-situ wh phrases are sensitive to wh-islands.³

- (10) ??John-wa [Mary-ga nani-o katta kadooka] siritagatteiru no?
 John-TOP Mary-NOM what-ACC bought whether want.to.know Q

²Although Japanese scrambling is insensitive to wh-island, it is sensitive to Relative Clause islands and Adjunct islands. which suggests that Japanese scrambling involves movement.

- (i) a. ?*[Ano hon]-o_i John-ga [t_j t_i katta] hito_j-o sagasiteiru rasii.
 that book-ACC John-NOM bought person-ACC looking.for seem
 Intended: 'It seems that John is looking for the person who bought the book.'
 (Saito 1985:246)
- b. ?*[Sono hito]-o_i John-ga [Mary-ga t_i syokuji-ni sasotta node]
 the person-ACC John-NOM Mary-NOM dinner-to invited because
 rakutansiteiru.
 be.depressed
 Intended: 'John is depressed because Mary invited the person to dinner.'
 (Abe 2012:68)

³Lasnik and Saito (1992) judge the sentence in (10) as acceptable. However, for some speakers, the sentence (10) is rather degraded, and there is a clear contrast in their acceptability between sentences with scrambling out of a wh-island as in (9) and ones with an in-situ wh-phrase in the island as in (10).

Intended: ‘What_{*i*} does John wants to know whether Mary bought t_{*i*}?’

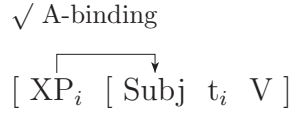
(Watanabe 1992a:263)

Assuming that Japanese in-situ wh-phrase involves wh-movement of a null operator before Spell- Out (Watanabe 1992), scrambling is different from such an operator movement.

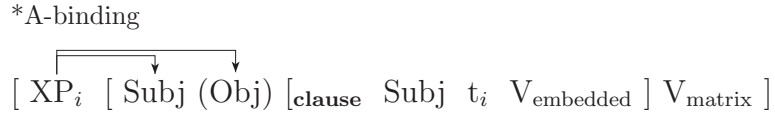
Thus scrambling operation is totally different from Topicalization and an operator movement such as wh-movement. Then, it has been controversial what kind of movement is involved in scrambling.

As for this question, previous studies show that there is an asymmetry in binding effects between scrambling that takes place within a clause (i.e., “clause-internal” scrambling) and one that takes place across a clause boundary (i.e., “long-distance” scrambling). Mahajan (1989, 1990) examining binding effects by a scrambled element in Hindi, observes that a scrambled element can be an (A-)binder at the landing site if the scrambling takes place within a clause, while one cannot if the scrambling takes place across a clause boundary. As well as the case of Hindi, Japanese scrambling shows the same contrast; while clause-internal scrambling allows A-binding from the landing site, long-distance scrambling does not, which is generalized in (12) (Tada 1990, 1993; Saito 1992, Nemoto 1993, Abe 1993). (We will look at the detail in Section 5.2.)

- (11) a. *Clause-internal scrambling*



- b. *Long-distance scrambling*



- (12) In Japanese, clause-internal scrambling can produce a new binding relation, while long- distance scrambling cannot.

In this chapter, contrary to the widely-assumed generalization in (12), I observe that long- distance scrambling can produce a new binding relation in some environments. The observation is that scrambling out of a (finite) clause can feed a new binding relation if the embedded subject is null (i.e., pro) (which is discussed in Section 5.3) and that even when scrambling takes place out of a clause with a null subject, a scrambled element cannot bind into the matrix subject if there is a matrix object (which is discussed in Section 5.4). Given the observation, I make the following generalization.

- (13) *Generalization on Long-distance scrambling in Japanese*

Long-distance scrambling can produce a new binding relation only if i) the embedded subject is null and ii) a bindee is contained in the matrix dative argument (or in the matrix subject if there is no dative argument).

In this chapter, I will show that the new generalization (13) can be explained under the proposed analysis without resorting to A/ \bar{A} -distinction.

6.2 Asymmetry in Binding Effects between Clause-internal Scrambling and Long-distance Scrambling

In the studies of Japanese scrambling, it has been observed that there is an asymmetry between clause-internal scrambling (scrambling that takes place within a clause) and long-distance scrambling (scrambling that takes place across a clause boundary), as stated in (14).

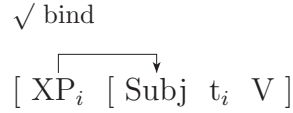
- (14) In Japanese, clause-internal scrambling can produce a new binding relation, while long-distance scrambling cannot.

Let us look at the case of clause-internal scrambling. As illustrated in (15), when scrambling takes place within a clause, the moved element can bind from the landing position, which is exemplified in (16), which is a case of anaphor binding, and in (17), which is a case of variable binding.⁴

⁴Hoji (2006), presenting some empirical evidence, concludes that *otagai* “each other” in Japanese is not a (local) anaphor. One crucial piece of evidence for this conclusion is that *otagai* does not need a c-commanding antecedent (Kuno and Kim 1994).

- (i) [otagai₁-no koibito]-ga [John to Bill]₁-ni iiyotta (koto)
 each.other-GEN lover-NOM John and Bill-DAT tried.to.seduce fact
 ‘John’s lover tried to seduce Bill, and Bill’s lover tried to seduce John.’

(15) *Clause-internal scrambling*



(16) *Clause-internal scrambling: Anaphor binding*

- a. *[Otagai₁-no sensei]-ga karera₁-o hihansita.
 each.other-GEN teacher-NOM they-ACC criticized
 (lit.) ‘[Each other]₁’s teachers criticized them₁.’
- b. **Karera₁-o_j** [otagai₁-no sensei]-ga **t_j** hihansita.
 they-ACC each.other-GEN teacher-NOM criticized
 ‘Them₁, [each other]₁’s teachers criticized.’ (a-b, Nemoto 1999:137)
- c. *[Otagai₁-no sensei]-ga karera₁-ni deatta.
 each.other-GEN teacher-NOM they-DAT met
 (lit.) ‘[Each other]₁’s teachers met them₁.’
- d. **Karera₁-ni_j** [otagai₁-no sensei]-ga **t_j** deatta.
 they-DAT each.other-GEN teacher-NOM met
 ‘Them₁, [each other]₁’s teachers met.’

In examples (16-a) and (16-c), the anaphor *otagai* “each other” is contained in the subject and its antecedent *karera* “they” is the object. Contrasted to these unacceptable cases, the sentences become acceptable when the object undergoes scrambling to the front of the sentence, as in (16-b) and (16-d). Given this contrast, it is argued in previous studies that the scrambled element can bind (into the subject)

Given Hoji’s (2006) conclusion, the reciprocal *otagai* “each other” should not be used for testing the possibility of A-binding. For this reason I use variable binding, but not reciprocal binding, for testing the possibility of A-binding in this thesis.

from the landing site when the scrambling takes place within a clause.⁵

Also, as shown by the availability of bound variable reading in (17-b) and (17-d), the quantificational phrase *dare* “who”, which undergoes scrambling from the object position, can license the bound variable *soitu* “the person” inside the subject from the landing site.

(17) *Clause-internal scrambling: Variable binding*

- a. ?*[*Soitu*₁-no *hahaoya*]-ga *dare*₁-o *aisiteiru* no?
the.person-GEN mother-NOM who-ACC love Q
Intended: ‘His₁ mother loves whom₁?’
- b. **Dare**₁-o_j [*soitu*₁-no *hahaoya*]-ga *t_j* *aisiteiru* no?
who-ACC the.person-GEN mother-NOM love Q
(lit.) ‘Whom₁, his₁ mother loves?’ (a-b, Nemoto 1999: 138)
- c. ?*[*Soitu*₁-no *hahaoya*]-ga *dare*₁-ni *kooen-de deatta* no?
the.person-GEN mother-NOM who-DAT park-at met Q
Intended: ‘His₁ mother met whom₁ at the park?’
- d. **Dare**₁-ni_j [*soitu*₁-no *hahaoya*]-ga *t_j* *kooen-de deatta* no?
who-ACC the.person-GEN mother-NOM park-at met Q
(lit.) ‘Whom₁, his₁ mother met at the park?’

Provided the definitions in (18) and (19) under the framework of Chomsky (1981), these facts have been captured by assuming that clause-internal scrambling can be A-movement.

⁵As noted in footnote 4 in this chapter, using *otagai* “each other” is not appropriate for testing A-binding properties. Thus, the acceptability contrast shown by the examples in (16) are not conclusive for the argument that clause-internal scrambling can feed A-binding in Japanese.

(18) α A-binds β iff α and β are coindexed, and α c-commands β , and α is in A-position. (Chomsky 1981)

(19) An anaphor/bound variable must be A-bound.

That is, since an element can move to an A-position via clause-internal scrambling, it can A-bind a reciprocal or a bound variable without showing weak-crossover effects.⁶ Although a purpose of this study is to abolish A/ \bar{A} -distinction, I call scrambling by which a moved element shows some A-properties such as being an A-binder at the landing site “A-scrambling”, and scrambling does not show such a properties “ \bar{A} -scrambling” for convenience.

In contrast to the case of clause-internal scrambling, which can be A-scrambling, long-distance scrambling does not allow a new binding relation, as illustrated in (20).

⁶As exemplified in (i), an anaphor/reciprocal that undergoes clause-internal scrambling across a coindexed subject can be coreferential with the subject.

- (i) *zibun-zisin*₁-o_i/otagai₁-o [Taro₁-ga/[Taro_o to Jiro_o]₁-ga t_i semeta]
 self-self-ACC/each.other-ACC Taro-NOM/Taro and Jiro-NOM blamed
 ”Taro_i/[Taro and Jiro]_j blamed himself_i/each other_j”

Given the acceptable sentence, it is generally assumed that a position which *zibun-zisin* “self-self”/otagai “each other” scrambles to in (i) should be an \bar{A} -position; otherwise, the sentence in (i) would violate condition C if Condition C is everywhere condition (Lebeaux 1998). Given this assumption, the widely-held view is that Japanese clause-internal scrambling can target either A-position or \bar{A} -position. Note, however, that another possibility is that Condition C is an LF condition (Saito 2003) and *zibun-zisin* “self-self”/otagai “each other” is reconstructed at LF to satisfy the condition. In this case, it cannot be concluded that the scrambled element *zibun-zisin* “self-self”/otagai “each other” in (i) is in \bar{A} -position.

- (20) * bind
- $$\text{XP}_i \begin{array}{c} \overbrace{\hspace{1.5cm}} \\ \downarrow \quad \downarrow \end{array} \begin{bmatrix} \text{Subj} & (\text{Obj}) & [\text{clause} & \text{Subj} & t_i & V_{\text{embedded}}] & V_{\text{matrix}} \end{bmatrix}$$

In the examples (21-b) and (21-d), the object in the embedded clause *karera* "they" undergoes scrambling across a clause boundary to the sentence-initial position. In such a case, the scrambled element cannot bind the reciprocal *otagai* "each other" from the final landing position, as shown by the unacceptability of the sentences.

(21) *Long-distance scrambling: Anaphor binding*

- a. *[Otagai₁-no sensei]-ga [Hanako-ga karera₁-ni gakkai-de
each.other-GEN teacher-NOM Hanako-NOM they-DAT conference-at
deatta to] sinjiteiru.
met COMP believed
'[Each other]₁'s teachers believe that Hanako met them₁ at a
conference.'
- b. ***Karera₁-ni** [otagai₁-no sensei]-ga [Hanako-ga t_i
they-DAT each.other-GEN teacher-NOM Hanako-NOM
gakkai-de deatta to] sinjiteiru.
conference-at met COMP believed
'Them₁, [each other]₁'s teachers believe that Hanako met at a
conference.'
- c. *Masao-ga [otagai₁-no sensei]-ni [Hanako-ga karera₁-o
Masao-NOM each.other-GEN teacher-DAT Hanako-NOM they-ACC
hihansita to] itta.
criticized COMP said
'Masao told [each other]₁'s teachers that Hanako criticized them₁.'
- d. ***Karera₁-o_i** Masao-ga [otagai₁-no sensei]-ni [Hanako-ga t_i
they-ACC Masao-NOM each.other-GEN teacher-DAT Hanako-NOM
hihansita to] itta.
criticized COMP said
'Them₁, Masao told [each other]₁'s teachers that Hanako criticized.'
(c-d, Nemoto 1999:141)

As well as anaphor binding, long-distance scrambling cannot make variable binding possible. As exemplified in (22-b) and (22-d), when scrambling takes place across a clause boundary, a scrambled quantificational element cannot license the bound variable *soitu* ‘the person’ from the landing position.⁷

(22) *Long-distance scrambling: Variable binding*

- a. *[*Soitu*₁-no *hahaoya*]-ga [*Hanako*-ga *dare*₁-o *aisiteiru to*]
 the.person-GEN mother-NOM Hanako-NOM who-ACC love COMP
 itta no?
 said
 Intended: ‘His₁ mother said that Hanako loved whom₁?’

⁷Nemoto (1993, 1999), pointing out that sentences like (22-b) are mildly degraded but not totally unacceptable, concludes that variable binding should not be used as a diagnostic for A/ \bar{A} -position (or A/ \bar{A} -movement). Note, however, that the marginal status of such a sentence is possibly due to so-called *Major Object* (Hoji 1990, Takano 2003). That is, it is possible that a fronted Accusative-marked object is base generated in the matrix clause as a Major Object, which binds a *pro* in the embedded clause, as in (i).

- (i) a. Taro-ga Hanako(-no koto)₁-o orokanimo [*pro*₁ *tensai-da to*] itta/omotta.
 Taro-NOM Hanako-GEN thing-ACC ridiculously genius-COP COMP said/thought
 ‘Taro ridiculously said/thought that Hanako was a genius’
 b. ?Taro-ga Hanako(-no koto)₁-o ukkari [John-ga *pro*₁ *aisiteiru to*] itta.
 Taro-NOM Hanako-GEN thing-ACC unthinkingly John-Nom love COMP said
 ‘Taro unthinkingly said that John loved Hanako.’

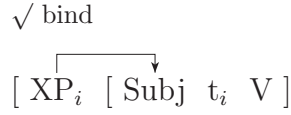
This possibility is gone when a Dative-marked object is used as exemplified in (22-d). As shown in (22-d) and observed in Abe (1993) and Takano (2010), sentences are unacceptable with a bound variable reading if a Dative-marked object undergoes long-distance scrambling across a coindexed element contained in the matrix element.

- b. ?Dare₁-o_j [soitu₁-no hahaoya]-ga [Hanako-ga t_j aisiteiru
who-ACC the.person-GEN mother-NOM Hanako-NOM love
to] itta no?
COMP said Q
(lit.) ‘Whom₁ his₁ mother said that Hanako loved ?’
(a and b, Nemoto 1999:140)
- c. *[Soitu₁-no hahaoya]-ga [Hanako-ga dare₁-ni deatta to]
the.person-GEN mother-NOM Hanako-NOM who-DAT met COMP
omotta no?
thought Q
Intnded: ‘His₁ mother thought that Hanako met whom₁?’
- d. *Dare₁-ni_j [soitu₁-no hahaoya]-ga [Hanako-ga t_j deatta to]
who-DAT the.person-GEN mother-NOM Hanako-NOM met COMP
omotta no?
thought
Intnded: ‘Whom₁ his₁ mother thought that Hanako met?.’

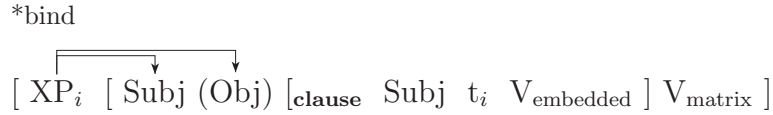
As these examples show, long-distance scrambling cannot feed a new binding relation. Given the A/ \bar{A} -distinction under the framework of Chomsky (1981), these facts follow from the assumption that long-distance scrambling cannot be A-movement, i.e., it must be \bar{A} -movement. Because the final landing cite of a long-distance-scrambled element is an \bar{A} -position, it cannot A-bind a reciprocal and license a bound variable. Given the observations so far, the widely assumed generalization is as in (23).

In Japanese, clause-internal scrambling can produce a new binding relation, while long- distance scrambling cannot.

(24) a. *Clause-internal scrambling*



b. *Long-distance scrambling*



Given the generalization (23), it has been claimed that clause-internal scrambling can be A-movement whereas long-distance scrambling must be $\bar{\text{A}}$ -movement (Saito 1992, Tada 1990, 1993; Nemoto 1993, Abe 1993, a.o.). Therefore, under this claim, the crucial factor that determines whether a scrambling can be A-movement is whether the scrambling takes place across a clausal boundary or not. In the next subsection, I will show that crossing a clause boundary is not the crucial factor that determines a possibility of A-scrambling (i.e., scrambling by which a moved element at the landing site has an ability to bind); rather, overt/coverttness of the embedded subject is crucial for determining whether A-scrambling out of the clause is possible or not.

6.3 Long-distance A-scrambling: Non-finiteness vs. Coverttness of the Subject

As we have seen in the previous section, there is an asymmetry between clause-internal scrambling and long-distance scrambling in Japanese; the former can pro-

duce new binding relations whereas the latter cannot, which suggests that clause-internal scrambling can be A-movement while long-distance scrambling must be \bar{A} -movement.

Note, however, that it is not always the case that long-distance scrambling must be \bar{A} -scrambling. Nemoto (1993) observes that scrambling out of an obligatory control clause can produce new binding relations. Assuming that a control clause is a non-finite clause, Nemoto (1993) concludes that scrambling out of a non-finite clause behaves like clause-internal scrambling (i.e., can be A-scrambling). It follows from Nemoto's (1993) study that long-distance scrambling can be A-movement if it takes place out of a non-finite clause. Given Nemoto's (1993) study, the crucial factor that determines a possibility of A-scrambling is whether the scrambling takes place out of a finite clause or not.

In this section, I present novel data that suggest Nemoto's (1993) conclusion is incorrect. I will show that long-distance scrambling can be A-scrambling, even when it takes place out of a finite clause, if the subject in the embedded clause is null. Given the new observation, the crucial factor that determines whether a scrambling can be A-movement is whether the scrambling takes place out of a clause with a overt subject or not.

6.3.1 Nemoto (1993)

Nemoto (1993) observes that when an element undergoes scrambling out of an obligatory control clause, it can bind an anaphoric element or license a bound variable

from the landing site. The sentences in (29) are examples of an obligatory subject control sentence, and the ones in (30) are examples of an obligatory object control sentence.

(25) *Subject control*

- a. *[Soko₁-no sotugyoosei]₂-ga [PRO₂ [mittu-izyo-no daigaku₁]-ni
it-GEN graduate-NOM three-or.more-GEN university-to
syutugansi-yoo to] sita.
apply-will COMP did
Intended: ‘Their₁ graduates tried to apply to [three or more universities]₁.’
- b. [**Mittu-izyo-no daigaku₁**]-ni_j [soko₁-no sotugyoosei]₂-ga [PRO₂
three-or.more-GEN university-to it-GEN graduate-NOM
t_j syutugansi-yoo to] sita.
apply-will COMP did
(lit.) ‘Their₁ graduates tried to apply to [three or more universities]₁.’
(a-b, Takano 2010:86)

(26) *Object control*

- a. *Joe-ga [otagai₁-no yuujin]₂-ni [PRO₂ [Michael to Janet₁]-o
Joe-NOM each.other-GEN friend-NOM Michael and Janet-ACC
hihansuru-yoo(ni)] tanonda.
criticize-COMP asked
Intended: ‘Joe asked [each other]₁’s friends to criticize [Michael and Janet]₁.’
- b. [**Michael to Janet₁**]-o_j Joe-ga [otagai₁-no yuujin]₂-ni
Michael and Janet-ACC Joe-NOM each.other-GEN friend-NOM
[PRO₂ t_j hihansuru-yoo(ni)] tanonda.
criticize-COMP asked
‘Joe asked [each other]₁’s friends to criticize [Michael and Janet]₁.’
(a-b, Nemoto 1993:44)

In the sentences (25-b) and (26-b), the bolded element is base-generated in the embedded clause and undergoes scrambling out of a control clause. In such a case,

the moved element can bind an anaphoric element or license a bound variable from the landing site, as shown by the acceptability of the sentences. Thus, scrambling out of an obligatory control clause can feed binding.

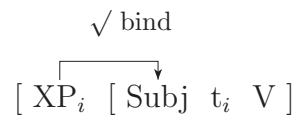
Given that observation, Nemoto (1993) concludes that (i) a control clause is different from a finite clause (i.e., a control clause is a non-finite clause), and (ii) scrambling out of a non-finite clause behaves like a clause internal scrambling. Then, a modified generalization (27) follows from Nemoto's (1993) study.

(27) *Generalization on Japanese scrambling (2nd version)*

In Japanese, clause-internal scrambling or scrambling out of a non-finite clause can produce a new binding relation, while scrambling out of a finite clause cannot.

(28) a. *Environment where A-scrambling is possible*

i. Scrambling within a clause

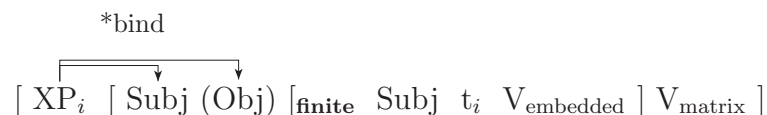


ii. Scrambling out of a NON-FINITE clause



b. *Environment where A-scrambling is impossible*

Scrambling out of a FINITE clause



Given the generalization (27), finiteness plays an important role to distinguish A-scrambling from \bar{A} -scrambling. That is, the crucial factor that determines the possibility of A-scrambling is whether scrambling takes place out of a finite clause or not. Contrasted to the previous studies, which assume that there should be no long-distance A-scrambling, Nemoto's study (1993) demonstrates that long-distance A-scrambling exists under a certain condition. That is, long-distance A-scrambling is possible if it takes place out of a non-finite clause.

In the next subsection, I present a new observation, which suggests that the generalization (27) does not suffice.

6.3.2 New observation: A-scrambling out of a finite clause

As we have seen in the previous subsection, Nemoto's (1993) study demonstrates that scrambling out of an obligatory control clause can feed A-binding. With the assumption that an obligatory control clause in Japanese is a non-finite clause, the generalization on long-distance scrambling in (29) follows from Nemoto's (1993) study.

(29) *Generalization on long-distance scrambling in Japanese (1st version)*

Long-distance scrambling can be A-movement only if it takes place out of a non-finite clause.

In this subsection, I present novel data that are an exception to the generalization (29). I show there is a case in which long-distance scrambling can feed A-binding

even if it takes place out of a finite clause.

First, take a look at the sentences in (30). In these sentences, the predicate *iu* “say” or *tazuneru* “ask” takes a complement clause whose subject is null.

- (30) a. Ken₁-ga Hanako₂-ni [pro_{1/3} (izure) [[mittu-izyoo-no
Ken-NOM Hanako-DAT soon three-or.more-GEN
kaisya]-ni] oobosuru-tumori-da to] itta.
company-DAT apply-will-COP COMP said
‘Ken₁ said to Hanako₂ that pro_{1/3} will apply to three or more companies
(soon).’
- b. Ken₁-ga Hanako₂-ni [pro_{2/3} (izure) [[mittu-izyoo-no
Ken-NOM Hanako-DAT soon three-or.more-GEN
kaisya]-ni] oobosuru-tumori-(da) ka] tazuneta.
company-DAT apply-will-COP Q asked
‘Ken₁ asked Hanako₂ whether pro_{2/3} will apply to three or more
companies (soon).’
- c. Ken₁-ga Hanako₂-ni [pro_{1/3} (kyonen) [[mittu-izyoo-no
Ken-NOM Hanako-DAT last.year three-or.more-GEN
daigaku]-o] tyoosasita to] itta.
company-ACC investigated COMP said
‘Ken₁ said to Hanako₂ that pro_{1/3} investigated three or more
companies (last year).’
- d. Ken₁-ga Hanako₂-ni [pro_{1/3} (kyonen) [[mittu-izyoo-no
Ken-NOM Hanako-DAT last.year three-or.more-GEN
daigaku]-o] tyoosasita ka] tazuneta.
company-ACC investigated Q asked
‘Ken₁ asked Hanako₂ whether pro_{2/3} investigated three or more
companies (last year).’

As exemplified in (30), the embedded null subject can be interpreted as coreferential with the matrix subject or the matrix object, or interpreted deictically. The interpretation of the subject differs depending on the interpretation of the embed-

ded clause and a given context.⁸ This suggests that the predicates *iu* “say” and *tazuneru* “ask” are not obligatory control predicates. Moreover, in the sentences (30), the tense in the embedded clause is present or past. This suggests that the complement clause of these predicates is finite.

Now, let us examine a case where scrambling takes place out of such a complement clause. As illustrated in (31), a scrambled element can bind into the matrix object from the landing site when the scrambling takes place out of a finite clause with a null subject, which is shown by the acceptable sentences in (33).⁹

- (31) $\sqrt{\text{bind}}$
- $\overbrace{\text{XP}_i \text{ [Subj Obj [finite clause pro } t_i \text{ V}_{\text{embedded}}] V_{\text{matrix}}]}$

The examples in (32) are sentences without scrambling, and the ones in (33) are ones with scrambling. In these sentences, the matrix predicate *iu* “say” or *tazuneru* “ask” takes a finite complement clause whose subject is null, and a bound variable is contained in the matrix object and a quantificational NP is the embedded object.

⁸As exemplified in (i), when the modal *yoo* “shall” is used, the embedded null subject can be interpreted as both/either the matrix subject and/or the matrix object, but cannot be interpreted deictically.

- (i) Ken₁-ga Hanako₂-ni [pro_{1/3} (izure) [[Mittu-izyoo-no kaisya]-ni] oubosi-yoo to]
 Ken-NOM Hanako-DAT soon three-or.more-GEN company-DAT apply-MOD COMP
 itta.
 said
 ‘Ken₁ said/proposed to Hanako₂ that pro_{1+2/1/2/*3} will apply to three or more companies (soon).’

⁹For some Japanese speakers, bound variable reading is impossible in (33) if the embedded subject *pro* is interpreted deictically.

- (32) a. *Ken₁-ga [soko₂-no raibaru gaisya-no syain]₃-ni [pro_{1/4}
 Ken-NOM it-GEN rival company-GEN employee-DAT
 (izure) [[mittu-izyoo-no kaisya₂]-ni] oobosuru-tumori-da to]
 soon three-or.more-GEN company-DAT apply-will-COP COMP
 itta.
 said
 Intended: ‘Ken₁ said to [employees of their₂ rival companies]₃ that
 pro_{1/4} will apply to [three or more companies₂].’
- b. *Ken₁-ga [soko₂-no raibaru gaisya-no syain]₃-ni [pro_{3/4}
 Ken-NOM it-GEN rival company-GEN employee-DAT
 (izure) [[mittu-izyoo-no kaisya₂]-ni] oobosuru-tumori-(da) ka]
 soon three-or.more-GEN company-DAT apply-will-COP Q
 tazuneta.
 asked
 Intended: ‘Ken₁ asked [employees of their₂ rival companies]₃ whether
 pro_{3/4} will apply to [three or more companies₂].’
- c. *Ken₁-ga [soko₂-no sotugyoosei]₃-ni [pro_{1/4} (izure) [[mittu-izyoo-no
 Ken-NOM it-GEN graduates-DAT soon three-or.more-GEN
 daigaku₂]-o] tyoosasuru-tumori-da to] itta.
 university-ACC investigate-will-COP COMP said
 Intended: ‘Ken₁ said to [their₂ graduate]₃ that pro_{1/4} will
 investigate [three or more universities₂].’
- d. *Ken₁-ga [soko₂-no sotugyoosei]₃-ni [pro_{3/4} (izure) [[mittu-izyoo-no
 Ken-NOM it-GEN graduates-DAT soon three-or.more-GEN
 daigaku₂]-o] tyoosasuru-tumori-(da) ka] tazuneta.
 university-ACC investigate-will-COP Q asked
 Intended: ‘Ken₁ asked [their₂ graduate]₃ whether pro_{3/4} will
 investigate [three or more universities₂].’

- (33) a. (?)**[[Mittu-izyoo-no kaisya₂]-ni]_i** Ken₁-ga [soko₂-no
 three-or.more-GEN company-DAT Ken-NOM it-GEN
 raibaru-gaisya-no syain]₃-ni [pro_{1/4} (izure) t_i
 rival-company-GEN employee-DAT soon
 oobosuru-tumori-da to] itta.
 apply-will-COP COMP said
 (lit.) ‘Ken₁ said to [employees of their₂ rival companies]₃ that pro_{1/4}
 will apply to [three or more companies₂].’
- b. (?)**[[Mittu-izyoo-no kaisya₂]-ni]_i** Ken₁-ga [soko₂-no
 three-or.more-GEN company-DAT Ken-NOM it-GEN

raibaru-gaisya-no syain]₃-ni [pro_{3/4} (izure) t_i
 rival-company-GEN employee-DAT soon
 oobosuru-tumori-(da) ka] tazuneta.
 apply-will-COP Q asked
 (lit.) ‘Ken₁ asked [employees of their₂ rival companies]₃ whether pro_{3/4}
 will apply to [three or more companies₂].’

- c. (?)[[**Mittu-izyoo-no daigaku**]₂]-o]_i Ken₁-ga [soko₂-no
 three-or.more-GEN university-ACC Ken-NOM it-GEN
 sotugyoosei]₃-ni [pro_{1/4} (izure) t_i tyoosasuru-tumori-da to] itta.
 graduates-DAT soon investigate-will-COP COMP said
 (lit.) ‘Ken₁ said to [their₂ graduate]₃ that pro_{1/4} will investigate [three
 or more universities₂].’

- d. (?)[[**Mittu-izyoo-no daigaku**]₂]-o]_i Ken₁-ga [soko₂-no
 three-or.more-GEN university-ACC Ken-NOM it-GEN
 sotugyoosei]₃-ni [pro_{3/4} (izure) t_i tyoosasuru-tumori-(da) ka]
 graduates-DAT soon investigate-will-COP Q
 tazuneta.
 asked
 (lit.) ‘Ken₁ asked [their₂ graduate]₃ whether pro_{3/4} will
 investigate [three or more universities₂].’

The sentences in (32) are ungrammatical because an anaphoric element or a bound variable is not c-commanded by its antecedent. Contrasted to the sentences in (32), the sentences in (33) are acceptable though they are a little degraded for some speakers.¹⁰ The acceptability of the sentences (33) shows that the scrambled element can bind into an element in the matrix clause from the final landing site,

¹⁰I assume that the degradedness should be attributed to complex processing. Contrasted to a sentence without a long-distance scrambling, as in (ia), a sentence with a long-distance scrambling, as in (ib), is more difficult to process.

- (i) a. Ken₁-ga [Nissan-no syain]-ni [pro_{1/4} (izure) [mittu-izyoo-no
 Ken-NOM Nissan-GEN employee-DAT soon three-or.more-GEN
 kaisya]-ni oobosuru-tumori-da to] itta.
 company-DAT apply-will-COP COMP said
 ‘Ken said to employees/an employee of Nissan that pro_{1/4} will apply to three or more
 companies.’

which indicates that long-distance scrambling can feed binding even if it takes place out of a finite clause that is not an obligatory control clause.

Additional data are given in (36). In these examples, a bound variable is contained in the matrix subject and a quantificational NP is an embedded object. As shown in the sentences in (36), a scrambled element can bind into the matrix subject.

(34) $\sqrt{\text{bind}}$

$\begin{array}{c} \text{XP}_i \quad \left[\begin{array}{c} \text{Subj} \quad [\text{finite clause} \quad \text{pro} \quad t_i \quad V_{\text{embedded}}] \quad V_{\text{matrix}} \end{array} \right] \end{array}$

(35) a. * $[\text{Soko}_2\text{-no raibaru-gaisya-no syain}]_1\text{-ga}$ $[\text{pro}_{1/3} (\text{izure})$
 it-GEN rival-company-GEN employee-NOM soon
 $[[\text{mittu-izyoo-no kaisya}_2]\text{-ni}]$ oobosurusuru-tumorida to] itta.
 three-or.more-GEN company-DAT apply-will COMP said
 Intended: ‘[Employees of their₂ rival companies]₁ said that $\text{pro}_{1/3}$ will
 apply to [three or more companies₂].’

 b. * $[\text{Soko}_2\text{-no sotugyoosei}]_1\text{-ga}$ $[\text{pro}_{1/3} (\text{izure})$ $[[\text{mittu-izyoo-no}$
 it-GEN graduate-NOM soon three-or.more-GEN
 $\text{daigaku}_2]\text{-o}]$ tyoosasuru-tumorida to] itta.
 university-ACC investigate-will COMP said
 Intended: ‘[Their₂ graduates]₁ said that $\text{pro}_{1/3}$ will investigate [three
 or more universities ₂].’

(36) a. ? $[[\text{Mittu-izyoo-no kaisya}_2]\text{-ni}]_i$ $[\text{soko}_2\text{-no raibaru-gaisya-no}$
 three-or.more-GEN company-DAT it-GEN rival-company-GEN
 $\text{syain}]_1\text{-ga}$ $[\text{pro}_{1/3} (\text{izure}) t_i$ oobosurusuru-tumorida to] itta.
 employee-NOM soon apply-will COMP said
 ‘[Employees of their₂ rival companies]₁ said that $\text{pro}_{1/3}$ will apply

 b. $[\text{mittu-izyoo-no kaisya}]\text{-ni}_i$ Ken₁-ga $[\text{Nissan-no syain}]\text{-ni}$ $[\text{pro}_{1/4}$
 three-or.more-GEN company-DAT Ken-NOM Nissan-GEN employee-DAT
 $(\text{izure}) t_i$ oobosuru-tumori-da to] itta.
 soon apply-will-COP COMP said
 ‘Ken said to employees/an employee of Nissan that $\text{pro}_{1/4}$ will apply to three or more
 companies.’

to [three or more companies₂].’

- b. ?[[**Mittu-izyoo-no daigaku**₂]-o]_i [soko₂-no sotugyoosei]1-ga [pro_{1/3}
three-or.more-GEN university-ACC it-GEN graduate-NOM
(izure) **t**_i tyoosasuru-tumorida to] itta.
soon investigate-will COMP said
‘[Their₂ graduates]1 said that pro_{1/3} will investigate [three or more
universities ₂].’

Contrasted to the sentences in (35), where scrambling does not take place, the sentences in (36), where scrambling takes place, are acceptable (though it is degraded contrasted to the sentences in (33)). Again, this shows that long-distance scrambling can feed binding even though it takes place out of a finite clause.

Note that, as observed in previous studies, Scrambling out of a finite clause cannot feed binding if the embedded subject is overt, which is exemplified in (38).

- (37) a. *Ken₁-ga [soko₂-no raibaru-gaisya-no syain]₃-ni
Ken-NOM it-GEN rival-company-GEN employee-DAT
[Hanako/kare_{1/4}-ga (izure) [[mittu-izyoo-no kaisya₂]-ni]
Hanako/he-NOM soon three-or.more-GEN company-DAT
oobosuru-tumori-da to] itta.
apply-will-COP COMP said
Intended: ‘Ken₁ said to [employees of their₂ rival companies]₃
that Hanako/he_{1/4} will apply to [three or more companies₂].’
- b. *Ken₁-ga [soko₂-no raibaru-gaisya-no syain]₃-ni
Ken-NOM it-GEN rival-company-GEN employee-DAT
[Hanako/kare_{3/4}-ga (izure) [[mittu-izyoo-no kaisya₂]-ni]
Hanako/he-NOM soon three-or.more-GEN company-DAT
oobosuru-tumori-(da) ka] tazuneta.
apply-will-COP Q asked
Intended: ‘Ken₁ asked [employees of their₂ rival companies]₃
whether Hanako/he_{3/4} will apply to [three or more companies₂].’

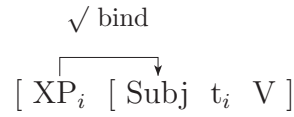
- (38) a. *[[**Mittu-izyoo-no kaisya**]₂]-ni]_i Ken₁-ga [soko₂-no
 three-or.more-GEN company-DAT Ken-NOM it-GEN
 raibaru-gaisya-no syain]₃-ni [Hanako/kare_{1/4}-ga (izure) t_i
 rival-company-GEN employee-DAT Hanako/he-NOM soon
 oobosuru-tumori-da to] itta.
 apply-will-COP COMP said
 Intended: ‘Ken₁ said to [employees of their₂ rival companies]₃ that
 Hanako/he_{1/4} will apply to [three or more companies₂].’
- b. *[[**Mittu-izyoo-no kaisya**]₂]-ni]_i Ken₁-ga [soko₂-no
 three-or.more-GEN company-DAT Ken-NOM it-GEN
 raibaru-gaisya-no syain]₃-ni [Hanako/kare_{3/4}-ga (izure) t_i
 rival-company-GEN employee-DAT Hanako/he-NOM soon
 oobosuru-tumori-(da) ka] tazuneta.
 apply-will-COP Q asked
 Intended: ‘Ken₁ asked [employees of their₂ rival companies]₃ whether
 Hanako/he_{3/4} will apply to [three or more companies₂].’

Each example in (33)a-b makes a minimal pair with the sentences in (38). The only difference between them is whether the embedded subject overtly appears or not. As shown by the unacceptability of the sentences in the latter case, a scrambled element cannot bind into an element in the matrix clause from the landing site, if the scrambling takes place out of a finite clause whose subject overtly appears.

Now, putting all of the data so far together, the environment where A-scrambling is possible and the one where A-scrambling is impossible is summarized in (39).

(39) a. *Environment where A-scrambling is possible*

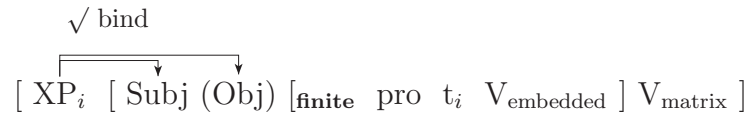
i. Scrambling within a clause



ii. Scrambling out of a NON-FINITE clause (Nemoto 1993)¹¹

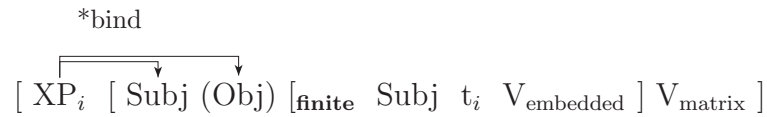


iii. Scrambling out of a FINITE clause with a *pro* subject¹²



b. *Environment where A-scrambling is impossible*

Scrambling out of a FINITE clause with an OVERT subject



Note that the crucial factor to determine a possibility of long-distance A-scrambling is not the finiteness of the embedded clause. As in (39-a)iii, long-distance scrambling can be A-scrambling even though it takes place out of a finite clause. Note also that

¹¹As Takano (2010) points out, a fronted XP can A-bind into the matrix object, but cannot into the matrix subject if the matrix object exists. I discuss this subject-object asymmetry in the next section.

¹²In this case, as well as in the case of scrambling out of a control clause, the fronted XP cannot bind into the matrix subject if the matrix object is present. I discuss this matter in the next section.

the scrambling in (39-a)ii and the one in (39-a)iii share the same property; that is, scrambling takes place out of a clause whose subject is null. Then, it is possible to unify the cases of (39-a)ii and (39-a)iiii under the condition of covertness of the embedded subject and make a new generalization in (40).

(40) *Generalization on Japanese scrambling III*

In Japanese, clause-internal scrambling or scrambling out of a clause with a null subject can produce a new binding relation, while scrambling out of a clause with an overt subject cannot.

Then, a new generalization on long-distance scrambling is as in (41), following which a crucial factor that determines the possibility of long-distance A-scrambling is whether the subject in the embedded clause out of which the scrambling takes place is overt or covert.

(41) *Generalization on Long-distance scrambling in Japanese*

In Japanese, long-distance scrambling can be A-scrambling only if the embedded subject is covert.

In summary, it follows from Nemoto's (1993) study that long-distance scrambling (scrambling across a clause boundary) can show A-property of a scrambled element only if it takes place out of a non-finite clause. Contrary to this, I presented data that suggest that long-distance scrambling out of a finite clause can feed a new binding relation if the embedded subject is null. Given the observation,

not a finite/non-finite difference but an overt/covert difference of the embedded subject crucially affects the possibility of long-distance A-scrambling.

6.3.3 Previous analyses in the GB theory

As we have seen in the previous subsection, scrambling across a clause boundary can show A-properties only if it takes place out of a clause with a covert subject. Then the question arises as why that is so. That is, how can we derive the generalization in (41)? I address this question under the approach proposed in this thesis in the next subsection, but before that, let us review some previous approaches that give an account for the assumed impossibility of long-distance A-scrambling (out of a finite clause). Firstly, let us look at Mahajan's (1989, 1990) explanation for the impossibility of long-distance A-scrambling. Observing that an element that undergoes scrambling out of a finite clause cannot produce a new binding relation in Hindi, Mahajan (1989, 1990) argues that such an A-scrambling is impossible because a trace of an element that undergoes A-scrambling out of a finite clause violates Condition A of the Binding Theory, assuming that a finite clause forms a binding domain in Hindi (Mahajan 1990:42). Mahajan (1989, 1990) assumes that A-scrambling targets an IP-Spec position (while \bar{A} -scrambling targets an XP-Adjoined position). Given this assumption and the assumption that an A-movement trace is [+anaphoric, -pronominal] under the framework of the GB theory (Chomsky 1982), when an XP undergoes A- scrambling out of a finite CP as illustrated in (42), the trace of the A-moved XP in the embedded [Spec, IP] is not bound within its binding

domain, the embedded CP (or IP), which violates condition A.

- (42)
$$[\text{IP } \text{XP}_i [\text{I}' \dots [\text{CP } [\text{IP } \text{t}_i [\text{I}' \dots]]]]] \text{ (order irrelevant)}$$

↑
A-scrambling

Thus, the impossibility of a long-distance A-scrambling out of a finite clause in Hindi can be captured with the Binding Theory.

Note, however, that Mahajan's (1989, 1990) explanation cannot directly apply to Japanese case as pointed out by Saito (1992), because local anaphors in the language do not show Tensed-S Condition (TSC) effects. As exemplified in (43-a), binding of a local anaphor is subject to Specified Subject Condition (SSC); the local anaphor *zibunzisin* cannot be bound by the NP *Taro* across an intervening a specified subject *Hanako*. However, as exemplified in (43-b), binding of a local anaphor is not subject to TSC; the anaphor *zibunzisin* in a subject position in a tensed clause can be bound by the NP *Taro* outside the tensed clause.

- (43) a. Taro₁-wa [Hanako₂-ga zibunzisin_{*1/2}-o semeru to]-wa
Taro-TOP Hanako-NOM self-ACC blame COMP-TOP
omottemominakatta.
never.thought
‘‘Taro₁ never thought that Hanako₂ would blame self_{*1/2}’’
- b. Taro₁-wa [zibunzisin₁-ga syoo-o toru to]-wa
Taro-TOP self-NOM award-ACC get COMP-TOP
omottemominakatta.
never.thought
‘‘Taro₁ never thought that self₁ would receive an award.’’
(a-b, Kitagawa 1986)

Thus, given that A-binding outside a tensed clause is possible as far as SSC is satisfied in Japanese, it is unclear how the impossibility of long-distance A-scrambling in Japanese can be accounted for with the Binding Theory as proposed in Mahajan (1989, 1990) for Hindi cases.

Saito (1992) gives an alternative account for the impossibility of long-distance A-scrambling in Japanese. Following the framework of Barriers (Chomsky 1986), Saito (1992) argues that when an element undergoes long-distance A-scrambling, the link of the A-chain violates the 0-subjacent requirement, which make a sentence ungrammatical. Chomsky (1986) argues that an A-bound trace must be antecedent-governed for satisfying the ECP, which means that A-movement cannot take place across a barrier.¹³

As illustrated in (44), assuming that A-scrambling targets IP-adjoined position, (which can be [Spec, IP] at LF,) Saito (1992) argues that an A-movement from

¹³*Barrier* is defined as the following.

- (i) γ is a barrier for β iff (a) or (b)
 - a. γ immediately dominates δ , δ is a BC for β ,
 - b. γ is a BC for β , $\gamma \neq \text{IP}$. (Chomsky 1986:14)
- (ii) γ is a BC for β iff γ is not L-marked and γ dominates β . (Chomsky 1986:14)
- (iii) α L-marks β iff α is a lexically category that θ -governs β (or β agrees with the head of γ that is θ -governed by α) (Chomsky 1986:15, 24).
- (iv) α θ -governs β iff α is a zero-level category that θ -marks β , and α and β are sisters. (Chomsky 1986:15)

the IP-adjoined position in the embedded clause to the IP-adjoined position in the matrix clause is disallowed because the movement crosses a barrier, the embedded CP, which inherits barrierhood from its complement IP.

$$(44) \quad \begin{array}{c} \text{Barrier} \\ \text{[IP XP}_i \text{ [I' . . . [CP [IP t}_i \text{ [IP . . .]]]]} \text{]} \text{ (order irrelevant)} \\ \uparrow \\ \text{*A-scrambling} \end{array}$$

Note that if an XP in the embedded IP-adjoined position first moves to the embedded [Spec, CP], and after that it moves to the matrix IP-adjoined position, every trace satisfies the ECP; as illustrated in (45), the trace t in the embedded IP is antecedent-governed by t' in the embedded [Spec, CP] because although an IP can be a blocking category (BC) for a government relation, it does not become an (intrinsic) barrier for the relation by definition, so no barrier intervenes between t' and t . Also t' is antecedent-governed by XP in the matrix [Spec, IP]. This is because the embedded CP is L-marked by the matrix verb (since it is a complement of the verb) and therefore it is not a BC and not a barrier for the trace t' being antecedent-governed by XP. Therefore no barrier intervenes between t' and XP, which allows XP to antecedent-govern t' .

$$(45) \quad \begin{array}{c} \text{[IP XP}_i \text{ [I' . . . [CP t'}_i \text{ [IP t}_i \text{ [IP . . .]]]]} \text{]} \text{ (order irrelevant)} \\ \uparrow \quad \uparrow \\ \text{\checkmark A-scrambling} \end{array}$$

Thus, under the framework of Chomsky (1986), A-scrambling out of the embedded clause into the domain of the matrix clause does not violate the ECP if the moved element drops by the embedded [Spec, CP] on the way to the matrix [Spec, IP].

Note, however, that such a series of movements is disallowed due to the ban on Improper Movement.¹⁴ That is, given that a movement to [Spec, CP] is an \bar{A} -movement, an element that moved to [Spec, CP] cannot undergo a further A-movement, because it results in an Improper Movement.

$$(46) \quad \left[\text{IP } \text{XP}_i \left[\text{I}' \cdot \cdot \cdot \left[\text{CP } t'_i \left[\text{IP } t_i \left[\text{IP } \cdot \cdot \cdot \right] \right] \right] \right] \right] \text{ (order irrelevant)}$$

* A-scrambling \bar{A} -scrambling

Under the framework of the GB theory, the ban on Improper Movement can be subsumed under Condition C (Chomsky 1981). That is, given that a trace of an NP that undergoes \bar{A} -movement is [-Anaphoric, -Pronominal] like an R-expression, the trace is A-bound by the NP in A-position if the NP undergoes further A-movement, which violates Condition C. Therefore, a series of movements as in (46) is impossible

¹⁴The ban on Improper Movement is discussed in Chomsky (1973) for the first time. Chomsky (1973) formulates Specified Subject Condition, Tensed S Condition, and (ib) by which movement from Comp to non-Comp position is prohibited.

- (i) No rule can involve X, Y in the structure ...X ..._[α] ...Z ...WYV ...] ... where
- a. Z is the specified subject of WYV or
 - b. Y is in Comp and X is not in Comp or
 - c. Y is not in Comp and α is a tensed S. (Chomsky 1973:244)

because of a violation of Condition C under the GB theory.

Thus, the impossibility of long-distance A-scrambling in Japanese can be attributed to a violation of the ECP under the framework of *Barriers* (Chomsky 1986) or the ban on Improper Movement, which can be derived by Condition C under the framework of Chomsky (1981); if an element undergoes long-distance scrambling from the embedded IP-adjoined position directly to the matrix IP-adjoined position, this causes a violation of the ECP, and if an element undergoes a movement from the embedded IP-adjoined position to the matrix IP-adjoined position through the embedded [Spec, CP], this causes a violation of Condition C.

Note, importantly, that although the impossibility of long-distance A-scrambling in Japanese can be explained under the GB theory, the explanation uses the A/ \bar{A} -distinction. That is, Saito's (1992) account relies on the stipulation given by Chomsky (1986a) that A-trace must be 0-subjacent to satisfy the ECP, contrasted with \bar{A} -trace which can satisfy the ECP by lexical government (Chomsky 1986). Moreover, the explanation for the ungrammaticality of Improper Movement under the framework of Chomsky (1981) uses A/ \bar{A} -distinction.¹⁵ As discussed in Section 4.2,

¹⁵As for the ban on Improper Movement, various studies propose various analyses to derive it under the current framework (Fukui 1993, Richard 1998, Ura 2001, Abels 2007 and Obata and Epstein 2008). Although approaches proposed by May 1979, Chomsky (1981) and Fukui (1993) use the A/ \bar{A} -distinction, ones proposed by Richard (1998), Ura (2001) and Abels (2007) can account for the ungrammaticality of some instances of Improper Movement without the A/ \bar{A} -distinction. However, these approaches still cannot explain the case discussed here. As I will discuss in the next section, under the analysis proposed in the thesis, the impossibility of such a movement as in (46) can be explained by the Anti-locality condition on Movement.

however, there is a problem with an analysis that resorts to A/\bar{A} -distinction. Thus, a question that arises here is how we can explain why an element that undergoes long-distance scrambling cannot feed a new binding relation. In Section 6.3.5, I will show that it can be explained under the proposed analysis in tandem with the condition proposed by Chomsky (2000), *the Phase-Impenetrability Condition (PIC)*.

6.3.4 Japanese scrambling as Adjunction

In order to give an analysis for deriving the new generalization (41), it is necessary to make it clear what the scrambling operation in Japanese is. Given that Japanese scrambling does not necessarily affect discourse function, it is widely assumed that Japanese scrambling is a purely optional movement without any trigger for the operation (Fukui 1993; Kuroda 1988; Saito 1989, 2004; Abe 1993; Saito and Fukui 1998).¹⁶ Such an assumption suggests that scrambling in Japanese should uniformly involve no feature checking.

(47) Japanese scrambling involves no feature checking.

Then, assuming that whether a movement of α targets XP-Spec or XP-adjoined position is determined by whether the moved element has a checking relation with the head of the XP or not, it follows from (47) that Japanese scrambling targets an XP-adjoined position, which is assumed in Saito (1985, 1989, 1992), Tada (1990,

¹⁶Since scrambling can feed a new binding relation, it is not the case that scrambling is pure PF-movement.

1993) and Abe (1993) a.o.

(48) Japanese scrambling targets an XP-adjoined position.

Contrary to the claim in (48), Miyagawa (2001), Miyamoto (2003), Miyagawa (2005) argue that A-scrambling, differently from \bar{A} -scrambling, involves an EPP-feature checking and targets a [Spec, IP] position. That is, according to Miyagawa (2001, 2003, 2005), when an element undergoes A-scrambling, the scrambled element moves to [Spec, IP] to check an EPP-feature leaving the subject in a [Spec, *v*P], as is illustrated in the following.

(49) $[_{IP}$ hon- o_i $[_{I'}$ $[_{vP}$ Taro-ga t_i kat]-ta]]
 book-ACC Taro-NOM buy-PAST
 ‘Taro bought a book.’

Note, however, that there is a problem in assuming that a scrambled element moves to [Spec, IP] to check an EPP-feature of I^0 as Miyagawa (2001, 2003, 2005) proposes. As I discuss below, a scrambled element cannot have Subjecthood at all, and such a property is problematic given that subjecthood is related to an element in [Spec, IP] in Japanese.

Let us, first, look at the case of binding of the anaphor *zibun(-zisin)* ‘self(-self)’. The Japanese anaphor *zibun(zisin)* ‘self(-self)’ is Subject-oriented, i.e., it must be bound by a Subject in the sentence. As exemplified in (50), the Nominative Agent DP, *Taro*, can bind *zibun(-zisin)* ‘self(-self)’ but the Accusative Theme DP, *Ziro*, cannot.

- (50) Taro₁-ga Ziro₂-o zibun(zisin)_{1/*2}-no ie-de nagut-ta.
 Taro-NOM Ziro-ACC self-self-GEN house-at hit-PAST
 ‘Taro₁ hit Ziro₂ at self_{1/*2}’s house.’

With this asymmetry, one may assume that thematic roles determine a possible binder; i.e., Agent can be a binder of the anaphor, but Theme cannot. Note, however, that it is not the case that a possible binder is related to thematic roles. As exemplified in (51), in a passive sentence, the Nominative Theme DP can bind the anaphor, but the Oblique Agent DP cannot.

- (51) Ziro₁-ga Taro₁-niyotte zibun(zisin)_{1/*2}-no ie-de nagu-rare-ta.
 Taro-NOM Ziro-by self-self-GEN house-at hit-PASS-PAST
 ‘Ziro₁ was hit by Taro₂ at self_{1/*2}’s house.’

Given the data (50) and (51), one may assume that Case determines a possible binder; i.e., Nominative DPs can be counted as a Subject, but Accusative DPs cannot. Note, however again, that it is not the case that a possible binder is related to Case. As exemplified in (52), in Dative Subject constructions, the Dative DP can bind the anaphor, but the Nominative DP cannot.

- (52) Taro₁-ni Ziro₂-ga zibun(-zisin)_{1/*2}-no ie-de nagur-(ar)er-u.
 Taro-DAT Ziro-NOM self-self-GEN house-at hit-can-PRES
 ‘It is possible for Taro₁ to hit Ziro₂ at self_{1/*2}’s house.’

Thus, it is reasonable to assume that a possible binder is structurally determined and a DP in IP-Spec is counted as a possible binder. Given this assumption, the example (53) is problematic for Miyagawa’s (2001, 2003, 2005) analysis.

- (53) Ziro₂-o Taroo₁-ga zibun(-zisin)_{1/*2}-no ie-de nagut-ta.
 Ziro-ACC Taro-NOM self-self-GEN house-at hit-PAST
 ‘Taro₁ hit Ziro₂ at self_{1/*2}’s house.’

The sentence (50) and the sentence (53) are a minimal pair; the only difference between them is that the object *Ziro* undergoes scrambling in (53). As shown by the acceptability of the two sentences, even though an object undergoes scrambling, a possible binder of the anaphor is not changed. If Miyagawa’s (2001, 2003, 2005) analysis were correct, the scrambled DP, *Ziro-o* “Ziro-ACC” should check an EPP-feature of I^0 and be in [Spec, IP], and the DP *Taro-ga* “Taro-NOM” should be in [Spec, *v*P] without checking an EPP-feature. Then, the prediction is that *Ziro* can be a binder of the anaphor, but *Taro* cannot, which is contrary to the fact. Thus, the fact that Subjecthood in the case of binding of *zibun(zisin)* “self(-self)” is not affected by scrambling suggests that the assumption that (A-) scrambling involves an EPP-feature checking and targets [Spec, IP] is wrong.

As well as the case of binding of *zibun(zisin)* “self(-self)”, a scrambled element does not show Subjecthood in Subject-honorification in Japanese. In Japanese, the expression *o-predicate-ni naru* “honorification marker-predicate-to become” shows an honorification for the Subject of the predicate. As shown by the acceptability contrast in (54), the honorificational expression is compatible with the DP *Yamada sensei* “Professor Yamada” in the subject position, as in (54-a), but it is incompatible with the DP *seito* “student” in the object position, as in (54-b).

- (54) *Subject Honorification in Japanese*

- a. Yamada sensei-ga seito-o o-tasuke-ni nat-ta.
Yamada teacher-NOM student-ACC HON-help-to become-PAST
'Prof. Yamada helped a student.'
- b. *Seito-ga Yamada sensei-o o-tasuke-ni nat-ta.
student-NOM Yamada teacher-ACC HON-help-to become-PAST
Intended: 'A student helped Prof. Yamada.' (a-b, Ura 2000:100)

The following examples, as well as the case of binding of *zibun(zisin)* "self(-self)", show that the possibility of the subject-honorification is related neither to thematic roles nor to Cases; rather it is related to structural position, say [Spec, IP].

- (55) a. Yamada sensei-ga seito-niyotte o-tasuker-are-ni nat-ta.
Yamada teacher-NOM student-ACC HON-help-to become-PAST
'Prof. Yamada was helped by a student.'
- b. Yamada sensei-ni sono-mondai-ga o-wakari-ni
Yamada teacher-ACC the-problem-NOM HON-understand-to
nar-u.
become-PRES
'Prof. Yamada understands that problem.' (Ura 2000:101)

Again, as exemplified in (56), a scrambled object cannot be a target of Subject honorification.

- (56) *Yamada sensei-o seito-ga o-tasuke-ni nat-ta.
Yamada teacher-ACC student-NOM HON-help-to become-PAST
Intended: 'A student helped Prof. Yamada.'

Finally, a scrambled element does not have the ability to control PRO in an adjunct clause. As exemplified in (57), a subject PRO in an infinitival adjunct clause is interpreted as coreferential with the matrix subject.

(57) *Binding of PRO*

- a. [PRO_{1/*2} sirome-o muki nagara], keisatu₁-ga sono hannin₂-o
white.eye-ACC show while police-NOM the culprit-ACC
taihosi-ta.
arrest-PAST
'The police₁ arrests the culprit₂ with his_{1/*2} eyes rolled in the back of
his head.'
- b. [PRO_{1/*2} sirome-o muki nagara], sono hannin₂-ga
white.eye-ACC show while the culprit-NOM
keisatu₁-ni(yotte) taihosi-ta.
police-by arrest-PAST-PAST
'The culprit₁ was arrested by the police₂ with his_{1/*2} eyes rolled in the
back of his head.'
- c. [PRO_{1/*2} sake-o nomi nagara], John₁-ni Mary₂-ga
sake-ACC drink while John-DAT Mary-NOM
damas-e-ru.
cheat-can-PRES
'While PRO_{1/*2} drinking sake, John₁ can cheat Mary₂.'

(Ura 2000:102)

As exemplified in (58), a PRO in an infinitival adjunct clause cannot be coreferential with the scrambled object.

- (58) [PRO_{1/*2} sirome-o muki nagara], sono hannin₂-o keisatu₁-ga
white.eye-ACC show while the culprit-ACC police-NOM
taihosi-ta.
arrest-PAST
'The police₁ arrests the culprit₂ with his_{1/*2} eyes rolled in the back of his
head.'

Thus, a scrambled object can never have subjecthood in binding of a subject-oriented anaphor *zibun*(*zisin*), in subject honorification and in binding of PRO in Japanese. Assuming that subjecthood is related to structural position [Spec, IP], these facts

suggests that a scrambled object is not in [Spec, IP]. Therefore, the absence of subjecthood of a scrambled object is problematic for Miyagawa's (2001, 2003, 2005) proposal that (A-)scrambling is EPP-driven and targets a [Spec, IP] position. For this reason, I assume, in this paper, that scrambling uniformly targets an XP-adjoined position (Saito 1985, 1989, 1992, Tada 1990, 1993, Abe 1993).

(59) Japanese scrambling targets an XP-adjoined position.

The assumption (59) can be derived given that Japanese scrambling involves no feature checking and that whether a movement targets XP-Spec or XP-adjoined position is determined by whether the moved element has a checking relation with X^0 (Ura 2000:20). Another possibility is that Japanese scrambling may involve feature checking, but may target an XP-adjoined position. I do not discuss the choice between the two possibilities (or another possibility) here, just assuming (59), because the assumption (59) is sufficient to achieve the purpose of this chapter.

6.3.5 Analysis: deriving the new generalization

In Section 6.3.2, we made a new generalization on Japanese scrambling, as stated in (60).

(60) *Generalization on Japanese scrambling III*

In Japanese, clause-internal scrambling or scrambling out of a clause with a null subject can produce a new binding relation, while scrambling out of

a clause with an overt subject cannot.

In this subsection, I will show that the generalization (60) can be explained under the proposed analysis in tandem with *the Phase-Impenetrability Condition (PIC)* proposed by Chomsky (2000) with the assumption that Case-checking determines phases. (Ferreira 2000, Takahashi 2011, Miyagawa 2011).

In Chapter 4, I derived presence/absence of WCO-effects without A/ \bar{A} -distinction by assuming that (i) only a copy with ϕ -features can be a binder and (ii) whether a moved element can carry its ϕ -features to the landing site is determined by the locality condition on pied-piping (Ura 2001) and the anti-locality condition on movement (Koizumi 1993, 2000, Abels 2003a,b, Bošković 2005; cf. Fukui 1993, Saito and Murasugi 1999, Grohmann 2000).¹⁷

¹⁷The definitions of *binding* and *the Minimal domain* and *intervene* are the following.

- (i) α binds β only if
 - (i) α is co-indexed with β , and
 - (ii) a copy of α c-commands a copy of β , and
 - (iii) the copies have ϕ -features.
- (ii) *Minimal Domain* (Chomsky 1995:198)
 - a. $Max(\alpha)$ = the least full-category [irreflexively] dominating α .
 - b. *Domain* of a head α = the set of nodes [irreflexively] contained in $Max(\alpha)$ that are distinct from α and do not contain α .
 - c. For any set S of categories, *Minimal* (S) = the smallest subset K of S such that for any $\gamma \in S$, some $\beta \in K$ reflexively dominates γ .
- (iii) *Domination* (Chomsky 1995:177)
 - a. α dominates β if every segment of α dominates β .

(61) Only a copy with ϕ -features can be a binder.

(62) *Locality Condition on Generalized Pied-Piping*

A formal feature cannot be pied-piped as a free rider if there is an intervening matching feature.

(63) *Anti-locality Condition on Movement*

Movement within a minimal domain is disallowed.

Given the proposed analysis, which is discussed in Section 2.2 in detail, and the assumption that Japanese scrambling targets an XP-adjoined position, the fact that clause-internal scrambling can produce a new binding-relation can be explained as follows. As illustrated in (64-b), if a quantificational element can undergo scrambling from the *v*P-edge position to the [Spec, IP], it can pied-pipe its ϕ features to the landing site because [Spec, IP] and the IP-adjoined position are equidistant from the *v*P-edge position, so ϕ -features of the subject in the [Spec, IP] are not an intervener for the pied-piping. Then, the wh-phrase *dare* “who” binds the bound pronoun *soitu* “his” by the copy of *who* in the IP-adjoined position c-commands the copy of *his* in the [Spec, IP].

b. α *contains* β if some segment of α dominates β .

(iv) γ *intervenes* between α and β iff α c-commands γ and γ c-commands β , and γ and α are not equidistant from β .

(v) α and β are *equidistant* from γ if they are in the same minimal domain.

(Chomsky 1995:184)

- (64) a. Dare₁-o_i [soitu₁-no hahaoya]-ga t_i aisiteiru no?
 who-ACC the.person-GEN mother-NOM love Q
 ‘Who₁ does his₁ mother love?’
- b. [IP who₁- ϕ /Case [IP [his₁ mother]- ϕ /Case I⁰ [_vP who₁- ϕ /Case [[his₁ mother]-
 ϕ /Case v⁰ [VP love who₁- ϕ /Case]]]]] \checkmark pied-piping of ϕ
- c. \checkmark bind
 [IP who₁- ϕ /Case [IP [his₁ mother]- ϕ /Case I⁰ [_vP who₁- ϕ /Case [[his₁ mother]-
 ϕ /Case v⁰ [VP love who₁- ϕ /Case]]]]]

Let us, next, look at why long-distance scrambling (out of a clause with an overt subject) cannot feed binding. As discussed in Section 6.3.3, such a property is explained by a violation of the ECP or the ban on Improper Movement under the framework of the GB theory. That is, if an element moves from the IP-adjoined position directly into the matrix clause, it violates the ECP, and if it undergoes A-movement into the matrix clause through the embedded [Spec, CP] position successive cyclically, it violates the ban on Improper Movement.

- (65) a. [IP XP_i [I' . . . [CP t'_i [IP t_i [IP . . .]]]]] (order irrelevant)
 \checkmark A-scrambling
- IP XP_i [I' . . . [CP t'_i [IP t_i [IP . . .]]]] (order irrelevant)
 * A-scrambling \bar{A} -scrambling


Under the current framework proposed in Chomsky (2000), the impossibility of a movement out of the domain of the embedded (finite) IP directly into the matrix clause can be explain by the Phase-Impenetrability Condition, as defined in (66).

(66) *The Phase-Impenetrability Condition (PIC)* (Chomsky 2000)

In phase α with head H, the domain of H is not accessible to operations outside α , only H and its edge are accessible to such operations.

Chomsky (2000) argues that once a phase is completed, its complement domain is transferred to PF/LF interfaces and an operation involving an element within its complement domain is impossible. According to Chomsky (2000, 2001), a phase head is C and v^* .¹⁸ Therefore, as illustrated in (67), once the embedded CP is completed, extraction out of its complement IP is disallowed by the PIC.


(67) $[_{YP} XP_i [_{Y'} \dots [_{CP} \boxed{[_{IP} \dots t_i \dots]}]]]$ (order irrelevant)



*movement out of the complement domain of a phase

Thus, given the PIC, an XP must stop by a CP-edge position (i.e., [Spec, CP]) to avoid a violation of PIC if it moves into a higher clause.

(68) $[_{YP} XP_i [_{Y'} \dots [_{CP} XP_i \boxed{[_{IP} \dots t_i \dots]}]]]$ (order irrelevant)



Successive cyclic movement

Then, given the PIC, an element that undergoes long-distance scrambling must move to [Spec, CP] in the course of the derivation. Now, let us consider the case where an embedded object moves to an IP-adjoined position. As illustrated in (69),

¹⁸ v^* is a transitive v with ϕ -features and an external argument. Therefore, passivised vP and unaccusative vP do not form a phase to which the PIC applies. Chomsky (2000, 2001) calls transitive vP “*strong* phases”, and passivised/accusative vPs “*weak* phases”

it can carry its ϕ -features to the landing site, if it moves from the vP -edge position to the IP-adjoined position.

$$(69) \quad \begin{array}{c} [\text{IP } \text{Obj-}\phi/\text{Case} \text{ } \underbrace{[\text{IP } \text{Subj-}\phi/\text{Case} \text{ } I^0 \text{ } [\text{vP } \text{Obj-}\phi/\text{Case} \text{ } [\text{Subj-}\phi/\text{Case} \text{ } v^0 \text{ } [\text{VP } \text{V } \text{Obj-} \\ \phi/\text{Case}]]]]]}_{\checkmark \text{ pied-piping of } \phi} \end{array}$$

Then, when the object undergoes long-distance scrambling, it has to move to the embedded [Spec, CP] because of the PIC. Notice, however, a movement from an IP-adjoined position to the immediately higher [Spec, CP] is disallowed by the anti-locality condition because the two positions are within the same minimal domain of the C^0 .

$$(70) \quad * \left[\boxed{\begin{array}{c} \text{CP} \quad C^0 \text{ } \underbrace{[\text{IP } \text{XP}]} \end{array}} \text{ } [\text{IP } \dots] \right] \quad \text{violation of the Anti-locality condition}$$

Thus, an element in an IP-adjoined position cannot move further because if it does, it violates either the PIC or the anti-locality condition.

Therefore, if an object undergoes long-distance scrambling, it must move from the vP -edge position to the CP-edge position without stopping by an IP-adjoined position. But, in this case, the object cannot pied-pipe its ϕ -features to the CP-edge position because of the intervening ϕ -features of the subject in [Spec, IP].

$$(71) \quad \begin{array}{c} [\text{CP } \text{Obj-} \phi/\text{Case} \text{ } \underbrace{[\text{IP } \text{Subj-}\phi/\text{Case} \text{ } I^0 \text{ } [\text{vP } \text{Obj-}\phi/\text{Case} \text{ } [\text{Subj-}\phi/\text{Case} \text{ } v^0 \text{ } [\text{VP } \text{V } \text{Obj-} \\ \phi/\text{Case}]]]]]}_{* \text{ pied-piping of } \phi} \end{array}$$

Thus, no copy made in the derivation after this has ϕ -features. Given the proposal that only a copy with ϕ -features can be a binder, these copies cannot be binders, so the embedded object cannot bind any element in the matrix clause.

$$(72) \quad \begin{array}{c} *bind \\ \overbrace{\hspace{1.5cm}}^{\hspace{1.5cm}} \downarrow \\ [\alpha_P \text{ Obj- } / \cancel{Case} \dots \text{ XP } \dots [\text{CP } \text{ Obj- } / \cancel{Case} [\text{IP } \text{ Subj-}\phi / \cancel{Case} \text{ I}^0 [\text{vP } \text{ Obj}_1\text{-}\phi / \cancel{Case} \\ [\text{Subj-}\phi / \text{Case } v^0 [\text{VP } \text{ V } \text{ Obj-}\phi / \cancel{Case}]]]]]] \end{array}$$

That is why long-distance scrambling (out of a clause with an overt subject) cannot feed binding.¹⁹

Let us, now, return to our new generalization. As demonstrated in Section 6.3.2, long-distance scrambling can feed a new binding relation if the embedded subject is covert.

(73) *Generalization on Japanese scrambling III*

In Japanese, clause-internal scrambling or scrambling out of a clause with a null subject can produce a new binding relation, while scrambling out of a clause with an overt subject cannot.

Under the present analysis, this means that a scrambled element even out of a finite clause can carry its ϕ -features to the matrix clause if the subject of the embedded

¹⁹Under this analysis, one may predict that a long-distance scrambling of a subject can feed binding. Note, however, it is observed that subjects in general cannot undergo scrambling in Japanese (Saito 1985), so we cannot test whether the prediction is borne out or not.

clause is null. Then, the next question that arises is why that is possible in such a situation. I propose to account for this question by assuming the following two hypotheses.

(74) A null element needs no Case.

(75) Case-assignment/-checking determines phases.

(Ferreira 2000, Takahashi 2011, Miyagawa 2011)

The hypothesis (74) straightforwardly follows from the original idea of the Case Theory developed in Chomsky (1980, 1981), under which syntactic (abstract) Case is related to the morphological property of NPs, case. Because morphological cases appear only with an overt NP, the Case Filter as defined in (76) is irrelevant to a covert NP.

(76) $*[_{NP} \alpha]$ if α has no Case and α contains a phonetic matrix (or is a variable).

(Chomsky 1981:175)

Thus, hypothesis (74) seems to be reasonable given that Case is related to morphology and an NP without a morphological realization is exempted from a requirement to have a Case.^{20,21}

²⁰Authier (1998, 1991, 1992), Hornstein (1999), Jaeggli (1986), and Roberge (1986) argue that *pro* is a Caseless element, which is compatible with the hypothesis (74).

²¹Lasnik and Freidin (1981), giving the data in (i), point out that traces of null operators, as well as overt wh-phrases, need Case.

(i) a. *I talked to the man who/Op_i it seems t_i to be a nice fellow.

Note, however, that in the history of Case Theory, Chomsky (1986b) relates Case Theory to Theta Theory. Chomsky (1986b), assuming the visibility condition (77), proposes that a requirement for an NP to have a Case comes from a requirement for the NP to satisfy the Theta Criterion, which applies at LF.

(77) An element is visible for θ -marking only if it is assigned Case.

(Chomsky 1986b:94)

b. I talked to the man who/?Op_i it seems t_i is a nice fellow.

Given the hypothesis in (74), it is unclear why a null operator, even though it is null, needs a Case. This problem can be solved by assuming that relative clauses involve a movement of a relative “head” noun, as in (ii), (Kayne (1994), Bianchi (1999, 2000) and that a sentence that is assumed to involve a null operator is derived by a deletion of a relative D⁰ (Bianchi 2000).

- (ii) a. [DP D⁰ [CP DP_i [C⁰ [IP ...t_i ...]]]]
 b. [DP the [CP [DP [NP man]_j [DP who t_j]]_i [C⁰ [IP ...t_i ...]]]]

Bianchi (1999, 2000) proposes that I) a relative “head” is always generated as a DP Headed by a relative D, which is *who* in the sentences in (i), II) after the DP headed by a relative D moves to [Spec, CP], the relative D⁰ can optionally undergo a Head Movement to the external D⁰, and III) by this means, the relative D⁰ is deleted.

- (iii) a. [DP the [CP [DP [NP man]_j [DP who t_j]]_i [C⁰ [IP ... t_i ...]]]]
 b. [DP ~~who~~_k-the [CP [DP [NP man]_j [DP t_k t_j]]_i [C⁰ [IP ... t_i ...]]]]

Given Bianchi’s (1999, 2000) approach, an overt wh-element and what is assumed as a null operator in a relative clause are the same lexical entry. Because a relative “head” is a DP in both cases, it needs a Case. Thus, following Bianchi’s (2000) approach, an assumed null operator, as well as an overt wh-element, needs a Case.

The idea that the Case requirement is directly related to the Theta requirement and that it is an LF- requirement is crucially problematic for the hypothesis in (74). This is because if the Case requirement is related to the Theta requirement, argument PROs and pros need to satisfy the Theta Criterion and therefore need to have a Case. Moreover, if the Case requirement is an LF requirement, there should be no difference between overt pronouns and covert ones, pros, at LF, so pros must have a Case as well as overt pronouns. Therefore, if the approach developed in Chomsky (1986b) is on the right track, the hypothesis (74) never follows.

As pointed out by Lasnik (2008), however, there are some problems in Chomsky's (1986b) approach. First, it is problematic to assume that the Case requirement is related to the Theta requirement given that there exist arguments that lack Case. Stowell (1981) shows that although apparent finite clausal complements to nouns, as exemplified in (78-a), might be appositives, infinitival clausal complements to nouns, as in (78-b), are actually complements because they pass all his complement tests.

- (78) a. My proof [that $2+2=4$]
 b. Jack's attempt [PRO to finish on time] (a-b, Lasnik 2008:28-29)

Given that the infinitival clausal complements are arguments of nouns, the acceptability of the phrase in (78-b) is problematic for the idea that relates the Case requirement to the Theta requirement. That is, given the idea, the infinitival clausal complement in (78-b) should not be able to satisfy the Theta Criterion because it

does not get a Case, and therefore the phrase in (78-b) should be ungrammatical, contrary to fact. Therefore, it is problematic to relate a requirement for an NP to have a Case to a requirement for the NP to satisfy the Theta Criterion.

Secondly, Chomsky's (1986b) assumption that the Case requirement of NPs is an LF requirement is doubtful, as discussed in Lasnik (2008). Lasnik (2008) points out that a violation of the Case Filter, whatever the definition is, can be repaired by ellipsis. As exemplified in (79-a), a certain type of verb like *allege* in English cannot take an infinitival complement if the embedded subject appears in the subject position. If the subject undergoes \bar{A} -movement, as in (79-b), the sentence becomes acceptable.

- (79) a. *I alleged John to be a fool.
 b. ?John, I alleged to be a fool. (a-b, Lasnik 2008:34)

Such a property of verbs like *allege* in English is generally observed in epistemic verbs and verbs of saying in Italian Rizzi (1978, 1981, 1982) and in French (Kayne 1981).

- (80) *Italian*
 a. *Possiamo ritenere [queste persone aver sempre fatto il loro
 can believe these persons have.INF always made the their
 dovere].
 duties
 Intended: 'We can believe these persons to have always done their
 duties'
 b. [Quante di queste persone]_i possiamo ritenere [t_i aver sempre
 how.many of these persons can believe have.INF always

fatto il loro dovere]?
 made the their duties
 ‘How many of these persons can we believe to have always done their
 duties?’ (a-b, Rizzi 1982:78-79)

(81) *French*

- a. Je croyais [Jean etre arrive].
 I believed John be.INF arrived
 Intended: ‘I believed John to have arrived.’
- b. [le garçon]_i que je croyais [t_i etre arrive].
 the boy that I believe be.INF arrived
 ‘the boy that I believed (to) have arrived’ (a-b, Kayne 1981:353)

Kayne (1981) and Rizzi (1982) assume that the ungrammaticality of the a-sentences in (80) and (81) follows from the Case filter: assuming that these predicates take CP (or \bar{S}) complement, the embedded subject in [Spec, IP](or within S) in the sentences cannot receive a Case in place because of CP (or \bar{S}) barrier. The-b sentences in (80) and (81) are grammatical because \bar{A} -movement makes it possible that the moved NP (or operator) is in a Case position on the way to the final landing site.²² The grammaticality contrast in English in (79) can be captured in a parallel way.²³ That

²²Given the hypothesis that Case-assignment/-checking determines phases (Ferreira 2000, Takahashi 2011, Miyagawa 2011), an ECM clause, even if it is a CP, should not be a phase, and therefore the matrix *v* should be able to Agree with an ECM subject even in [Spec, IP]. Then, it is unclear why ECM constructions in Italian/French and ones with *allege*-type verbs in English are ungrammatical, under the current framework. Further research is required to illuminate why CP becomes a barrier/phase in these cases.

²³Although ECM subjects with *allege*-type verbs in English behave like Italian/French ECM subjects in this point, they behave differently from each other with regard to Passivization; in the English cases, an ECM subject with *allege*-type verbs can be passivised, whereas that is impossible

impossibility of an ECM configuration with *allege*-type verbs is due to a violation of the Case filter, the acceptable cases with VP ellipsis as in (82-b) suggest that the requirement for an NP to have a Case must not be an LF requirement.²⁴

As discussed above, the Case theory developed in Chomsky (1986) might not be on the right track, and it is reasonable to make the hypothesis (74), repeated in (84).²⁵

²⁴Ito (2014) observes that an ECM subject is compatible with *allege*-type verbs in pseudo-gapping.

- (i) [Speaking of Harry₁...]
 - a. Mary alleged him_i to be crazy on Tuesday, like she did Bill_j on Wednesday.
 - b. Though Mary alleged him_i to be crazy accurately, Sue did Bill_j incorrectly.

Ito (2014), pointing out that a remnant in such a pseudo-gapping sentence cannot license a parasitic gap as exemplified in (ii), concludes that an ECM subject with *allege*-type verbs can potentially be in an agreement position, which suggests that the unacceptability of sentences such as in (79-a) should not be attributed to a violation of the Case filter.

- (ii) a. *Though Mary alleged him to be crazy on reflection, Sue did (without looking at e_1) Bill₁ (without looking at e_1). (*pseudo-gapping*)
 - b. Though Mary alleged him to be crazy on reflection, Sue did (without looking at e_1) [the man at the top of the list]₁. (*pseudo-gapping* + *Heavy NP Shift*)

If Ito's (2014) conclusion is on the light track, an argument against Chomsky's (1986) assumption that the Case requirement is an LF requirement is dissolved. Note, however, that because a mechanism of licensing a parasitic gap is unclear, it should not be concluded from the impossibility of licensing a parasitic gap that the element is an A-position.

²⁵It is assumed, in general, that *pros* appear in a (canonical) Case position while PROs appear in a non-Case position (or null-Case position). Given the hypothesis (84), a *pro*, as well as a PRO,

(84) A null element needs no Case.

Also, the hypothesis (75), which is repeated in (85) is empirically motivated; Ferreira (2000), Miyagawa (2011) and Takahashi (2011) observe that there is a case where a movement out of a complement domain of a Phase, which is prohibited by can appear in a non-Case position. Then, the question arises as to how the distribution of pros and PROs can be derived under the current approach.

One possibility is to remove the distinction between PROs and *pros*, eliminating PROs, as proposed in Hornstein (1998, 1999). Then, our grammar would employ only *pros* (and traces and Op) as null arguments. Given this possibility, a question that arises here is how a difference between obligatory control cases and non-obligatory ones can be explained. Take the following sentences for example. The sentences in (i) are the case of obligatory control and the ones in (ii) are non-obligatory control.

- (i) a. John₁ tried [*pro*_{1/*2} to solve the problem].
- b. Taroo₁-ga [*pro*_{1/*2} naki nagara] Hanako₁-ni puropoozusita.
 Taro-NOM cry with Hanako-DAT proposed
 ‘Taro₁ proposed Hanako₂ *e*_{1/*2} crying.’
- (ii) a. [pro to solve the problem] is difficult.
- b. Taroo₁-ga [*pro*_{1/2} kinoo keeki-o yaita]-to itta.
 Taro-NOM yesterday cake-ACC baked-COMP said
 ‘Taro₁ said that *e*_{1/2} baked a cake.’

The question is why the pros in (i) must be coreferential with a specific element in the sentence, while the ones in (ii) do not have to be.

One possibility is that as proposed in Hornstein (1998, 1999), obligatory control cases as in (i) involve movement, as illustrated in (iii), while non-obligatory control cases involve a *pro*, as in (ii).

- (iii) a. John_{*i*} tried [*t*_{*i*} to solve the problem].
- b. Taroo_{1*i*}-ga [*t*_{*i*} naki nagara] Hanako₂-ni puropoozusita.
 Taro-NOM cry with Hanako-DAT proposed
 ‘Taro₁ said that *e*_{1/2} baked a cake.’

the PIC, is possible when a head of the complement phrase does not check/assign

Another possibility is that the difference in question can be derived by a difference of selectional requirement of a predicate that takes a complement clause. Chierchia (1989) proposes that a complement clause can denote either a proposition or a property, and when a complement clause denotes a property, the clause involves an abstraction of an individual, as in (ivb).

- (iv) a. propoition: [he solve the problem]
 b. property: [O_i [he_i solve the problem]]

Under the framework of Chierchia (1989), when a clausal complement denotes a property, an abstracted element must be coreferential with a specific element in the matrix clause and interpreted as *de se* with respect to the element. Pointing out that an obligatory control PRO is always interpreted as *de se*, Chierchia (1989) argues that obligatory control clauses always denote a property involving an abstraction of an individual, as in (v).

- (v) John_{*i*} tried [O_i [*pro*_{*i*} to solve the problem]].

Following Chierchia (1989), the difference between the sentences in (i) and the ones in (ii) can be attributed to a difference between selectional requirements of the matrix predicates. That is, in (i), the predicate *try* or *nagara* “with” selects a property as its complement, and therefore the embedded subject must be coreferential with the matrix subject, whereas in (ii), the predicate *difficult* or *iu* “say” selects a proposition as its complement, and therefore, the embedded subject can refer to whatever is determined by the binding theory.

Howard Lasnik (p.c) points out that the semantic difference between proposition and property may correspond to syntactic difference between S and VP in Lasnik and Fiengo’s (1974) study. Lasnik and Fiengo (1974) propose that there are two types of predicates; one takes a VP (or *vP*) as its complement and the other takes an S (or IP). Predicates such as *tough* in *tough* constructions and *try* are the former type, and these predicates take a VP complement. If this analysis is

structural Case.^{26,27}

(85) Case-assignment/-checking determines phases.

(Ferreira 2000, Takahashi 2011, Miyagawa 2011)

Following the hypothesis, CPs are phases when the Head of their complement IP checks a (nominative) Case feature, as illustrated in (86-a). If, on the other hand, the head of their complement IP does not check a Case feature at all, CPs are not correct, the difference in question can be attributed to a syntactic selectional requirement, as well as a semantic one.

²⁶Epstein and Seely (2002) and Epstein et al. (2010, 2012) show that the hypothesis (85) is theoretically derived under the framework of Chomsky (2000), though I do not adopt the framework in this paper.

²⁷Norbert Hornstein (p.c) points out that the hypothesis (85) makes it possible to solve a problem that arises in Movement Theory of Control (Bowers (1973, 2008), Hornstein 1998, 1999, and O’Neil 1995). Movement Theory of Control assumes that movement of a controller takes place out of an embedded CP, as in (ib).

- (i) a. John tried to solve the problem.
- b. John_i tried [_{CP} C⁰ John_i to solve the problem]

Given the PIC and the assumption that CP is a phase (Chomsky 2000), however, the embedded CP would be a phase and therefore A-movement out of the CP should be prohibited. The hypothesis (85) makes it possible to solve this problem: Given the hypothesis, the embedded CP should not be a phase under Movement Theory of Control, because Movement Theory of Control assumes that a controller should not get a Case in the embedded clause so that it can move to a higher A-position, so the embedded I⁰ does not check (or assign) any Case. Thus, A-movement of a controller out of the embedded CP does not induce a violation of the PIC in the obligatory control constructions.

phases, as illustrated in (86-b). Similarly, vP is a phase if its Head v^0 checks an (accusative) Case, as illustrated in (87-a). If, on the other Hand, v^0 does not check a Case feature, its maximal projection vP is not a phase, as illustrated in (87-b).

- (86) a. $[_{CP} C^0 [_{IP} \text{Subj-Case} \overset{\curvearrowright}{I^0} \dots]] \longrightarrow CP \text{ is a phase}$
b. $[_{CP} C^0 [_{IP} \text{Subj} \quad I^0 \dots]] \longrightarrow CP \text{ is not a phase}$
- (87) a. $[_{vP} v^0 \overset{\curvearrowright}{[_{VP} \text{DP-Case} V^0 \dots]]} \longrightarrow vP \text{ is a phase}$
b. $[_{vP} v^0 [_{VP} \text{DP} \quad V^0 \dots]] \longrightarrow vP \text{ is not a phase}$

Now, given the two hypotheses (84) and (85), it is possible to explain why scrambling even out of a finite clause can feed binding if the embedded subject is covert. First, reconsider the case where long-distance scrambling takes place out of a finite clause with an overt subject. In this case, since the embedded subject is overt, it needs Case (or need to get its Case checked). Thus, the embedded I^0 must check a Case feature of the subject, which makes the CP a phase and the inside of its Complement IP cannot be accessed because of the PIC.

- (88) CP = Phase
- $$[_{CP} C^0 \boxed{[_{IP} \text{Subj-Case} \overset{\curvearrowright}{I^0} \dots XP \dots]}] \text{ (Order irrelevant)}$$

Therefore, the scrambled element must move from the vP -edge position directly to the CP-edge position without stopping by an IP-adjoined position due to the PIC and the anti-locality condition. Because of this, a copy of the scrambled element in the CP-edge position and in a higher position cannot retain its ϕ -features, due to

which it cannot bind any element base-generating in the matrix clause.

In the case where long-distance scrambling takes place out of a (finite) clause with a covert subject, on the other hand, the embedded CP does not become a phase given the two hypotheses (84) and (85). That is, with the hypothesis (84), the embedded subject does not have to get its Case checked, so the embedded I^0 does not have to check a Case feature (if we do not assume the Inverse Case Filter, which states that traditional Case assigners must assign a Case (Fukui and Speas 1986 and Bošković 2002)).²⁸ Then, with the hypothesis (85), the embedded CP is not a phase, so movement of XP out of the C^0 's complement IP is possible.

(89) CP \neq Phase

$[\alpha_P \text{ XP } [\text{CP } C^0 \text{ } [\text{IP } \text{PRO/pro } I^0 \dots \text{XP } \dots]]]$ (Order irrelevant)

Thus, in this case, an element that undergoes long-distance scrambling can move from an IP-adjoined position into the matrix clause. Notice that, as we have already seen before, an object can carry its ϕ -features to the embedded IP-adjoined position because the subject in [Spec, IP] is not an intervener. Therefore, the embedded object can carry its ϕ -features from the IP-adjoined position to a position in the matrix clause as long as there is no intervening matching features.

²⁸The motivation of the Inverse Case Filter is to deduce the EPP property. The idea of the Inverse Case Filter is that the traditional Case assigners must assign a Case in a Spec-Head configuration in overt Syntax. Nevins (2004) argues against the idea giving examples of cases of an XP movement to [Spec, IP] not for a Case reason and cases of Case assignment by I^0 without involving XP movement.

$$(90) \quad [\alpha_P \text{ Obj-}\phi/\text{Case} \dots [\text{CP } C^0 [\text{IP } \text{Obj-}\phi/\text{Case} [\text{IP } \text{PRO}/\text{pro-}\phi \text{ I}^0 [\text{vP } \text{Obj-}\phi/\text{Case} [$$

$$\text{PRO}/\text{pro-}\phi \text{ v}^0 [\text{VP } \text{V}^0 \text{Obj-}\phi/\text{Case}]]]]]] \quad \checkmark \text{ pied-piping of } \phi$$

If the embedded object in the embedded IP-adjoined position moves to the matrix *vP*-edge position and then to the matrix IP-adjoined position, it can carry its ϕ -features to the final landing site. Then, the object can bind into the matrix subject, as illustrated in (91).

$$(91) \quad \text{a.} \quad [\text{IP } \text{Emb} \text{Obj-}\phi/\text{Case} [\text{IP } \text{Mat} \text{Subj-}\phi/\text{Case} [\text{vP } \text{Emb} \text{Obj-}\phi/\text{Case} [\text{vP } \text{Mat} \text{Subj-}\phi/\text{Case}$$

$$[\text{VP } [\text{CP } [\text{IP } \text{Emb} \text{Obj-}\phi/\text{Case} [\text{IP } \dots]]]]]]] \quad \checkmark \text{ Pied-piping of } \phi$$

$$\text{b.} \quad \checkmark \text{bind}$$

$$[\text{IP } \text{Emb} \text{Obj-}\phi/\text{Case} [\text{IP } \text{Mat} \text{Subj-}\phi/\text{Case} [\text{vP } \text{Emb} \text{Obj-}\phi/\text{Case} [\text{vP } \text{Mat} \text{Subj-}\phi/\text{Case}$$

$$[\text{VP } [\text{CP } [\text{IP } \text{Emb} \text{Obj-}\phi/\text{Case} [\text{IP } \dots]]]]]]]$$

That is why sentences like (92) allows a bound variable reading.

$$(92) \quad ?[[\text{Mittu-izyoo-no kaisya}_2\text{-ni}]_i \text{ [soko}_2\text{-no raibaru-gaisya-no}$$

$$\text{three-or.more-GEN company-DAT it-GEN rival-company-GEN}$$

$$\text{syain}]_1\text{-ga [pro}_{1/3} \text{ (izure) } \mathbf{t}_i \text{ oobosurusuru-tumorida to]} \text{ itta.}$$

$$\text{employee-NOM soon apply-will COMP said}$$

$$\text{'[Employees of their}_2 \text{ rival companies]}_1 \text{ said that pro}_{1/3} \text{ will apply}$$

$$\text{to [three or more companies}_2\text{].}'$$

If, as illustrated in (93), the embedded object moves from the embedded IP-position to the adjoined position to the matrix VP whose Spec is occupied by the matrix object, it can pied-pipe its ϕ -features to the landing site. Then, from that position it can bind into the matrix object.

- (93) a. $[_{vP} [_{VP} Emb \text{Obj-}\phi/\text{Case} [_{VP} Mat \text{Obj-}\phi/\text{Case} [_{CP} [_{IP} Emb \text{Obj-}\phi/\text{Case} [_{IP} \dots]]]]]]$
 ↑
 b. $\sqrt{\text{bind}}$
 ↓
 $[\dots [_{VP} Emb \text{Obj-}\phi/\text{Case} [_{VP} Mat \text{Obj-}\phi/\text{Case} [_{CP} [_{IP} Emb \text{Obj-}\phi/\text{Case} [_{IP} \dots]]]]]]$

That is why a bound pronoun in the matrix object can be licensed by the scrambled embedded object when the embedded subject is null.

- (94) (?) $[[\text{Mittu-izyoo-no kaisya}_2\text{-ni}]_i \text{ Ken}_1\text{-ga } [\text{soko}_2\text{-no three-or.more-GEN company-DAT Ken-NOM it-GEN raibaru-gaisya-no syain}]_3\text{-ni } [\text{pro}_{1/4} (\text{izure}) t_i \text{ oobosuru-tumori-da rival-company-GEN employee-DAT soon apply-will-COP to}] \text{ itta.}$
 COMP said
 (lit.) ‘Ken₁ said to [employees of their₂ rival companies]₃ that pro_{1/4} will apply to [three or more companies₂].’

Note that in the example (94), the embedded object appears before the matrix subject. Thus, it undergoes a further movement from the VP-adjoined position to a position higher than the matrix subject.

- (95) $[_{\alpha P} Emb \text{Obj-}(\phi)/\text{Case} [_{IP} Mat \text{Subj-}\phi/\text{Case} \dots [_{vP} Mat \text{Subj-}\phi/\text{Case} [_{VP} Emb \text{Obj-}\phi/\text{Case} [_{VP} Mat \text{Obj-}\phi/\text{Case} [_{CP} [_{IP} Emb \text{Obj-}\phi/\text{Case} [_{IP} \dots]]]]]]]]$

If, however, the matrix vP is a phase, the object in the VP-adjoined position cannot move out of the matrix VP without stopping by the vP -edge position because of the PIC. Notice, however, the movement from a VP-adjoined position to the immediately higher vP -adjoined position is disallowed by the anti-locality condition.

- (96) a. $\left[{}_vP \ v^0 \left[{}_VP \ EmbObj \left[{}_VP \ . \ . \ . \right] \right] \right]$ (Order irrelevant)
 * PIC violation
- b. $\left[{}_vP \left[{}_vP \ v^0 \left[{}_VP \ EmbObj \right] \left[{}_VP \ . \ . \ . \right] \right] \right]$ (Order irrelevant)
 * Anti-locality

Therefore, once the embedded object moves to the VP-adjoined position, it can never undergo further movement if the vP is a phase. Note also that in order for an embedded object to bind into the matrix object, it must move to the matrix VP-adjoined position. Then, a prediction is that if the matrix vP is a phase, the embedded object, when it binds into the matrix object, can never be pronounced at a position before the matrix subject. The prediction is contrary to the facts, as shown by the acceptable sentences in (94) (which is one example in (33)). Thus, given the present approach, the matrix vP in these sentences must not be a phase.

The suggestion that the matrix vP in the sentences (33) is not a phase can be derived given (97) and (98).

- (97) Case-assignment/-checking determines phases.

(Ferreira 2000, Takahashi 2011, Miyagawa 2011)

- (98) The matrix v in the sentences (33) does not assign a Case to its arguments, DP and CP.

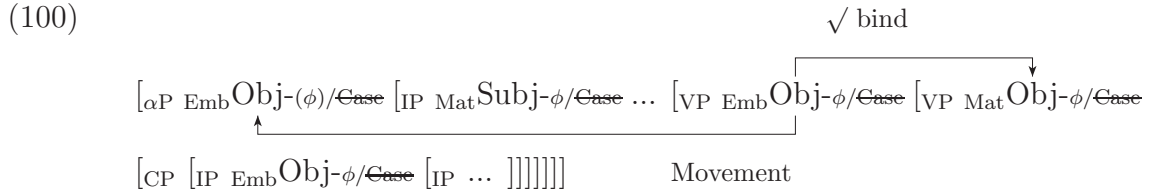
That is, if the matrix v does not involve any Case checking, its projection vP is not a phase. The following data are compatible with the assumption (98).

- (99) a. Ken-ga san-nin-no gakusei-ni [Taroo-ga (izure) sono
 Ken-NOM three-CL-GEN student-*ni* Taro-NOM soon the
 kaisya-o tyoosasuru-tumorida to/ka] itta/tazuneta.
 company-ACC investigate-will COMP/Q said/asked
 ‘Ken said/asked to three students that/if Taro will investigate the
 company.’
- b. Ken-ga gakusei-ni (?*san-nin) [Taroo-ga (izure) sono
 Ken-NOM student-*ni* three-CL Taro-NOM soon the
 kaisya-o tyoosasuru-tumorida to/ka] itta/tazuneta.
 company-ACC investigate-will COMP/Q said/asked
 ‘Ken said/asked to (three) students that/if Taro will investigate the
 company.’

As exemplified in (99), the indirect object, *gakusei-ni* “student-DAT” is incompatible with a Floating Numeral Quantifier (FNQ). Shibatani (1978) argues that a numeral quantifier can be floated off its host only if the host is a DP. Following Shibatani (1978), Miyagawa (1989) argues that licensing FNQs needs a c-command relation, and therefore a DP with a structural Case can c-command and license a FNQ, whereas a DP with a postposition cannot license a FNQ because the DP does not c-command it. Given Shibatani’s (1978) and Miyagawa’s (1989) arguments and the unacceptability of the sentence (99-b) with the FNQ, it is possible that the indirect objects of *iu* “say” or *tazuneru* “ask” appear with a postposition *ni*, rather than a structural-Case marker.²⁹ If this is on the right track, the assumption (98) is plausible, because it is generally assumed that a clausal complement should need no Case, so the verbs should (or can) not assign any Case.

²⁹Although Sadakane and Koizumi (1995) examine *ni* particle in Japanese in various constructions/contexts to classify it into four types, they do not examine the construction in the relevant sentences (i.e., the case where DP-*ni* appears with a clausal complement).

Thus, given that the matrix *vP* is not a phase in the examples (33), the embedded object can undergo movement from the matrix VP-adjoined position to a position preceding the matrix subject. Therefore, the embedded object can bind the matrix object and be pronounced at the beginning of the sentence, as exemplified in (94).



Thus, with the PIC (Chomsky 2000) and the two hypotheses (74) and (75), the generalization (60) can be derived under the analysis proposed in this thesis.³⁰

6.4 Long-distance A-scrambling: Subject/Object Asymmetry

In this section, I discuss an asymmetry between A-binding into the matrix Subject and into the matrix Object by an element that undergoes long-distance scram-

³⁰Juan Uriagereka (p.c.) pointed out that it is not only in Japanese long-distance A-scrambling but more general that a domain is transparent to extraction when a null category is in Specifier, as in absence of wh-island effects with null subjects. Then, it can be generalized that “un-Specified” projection is transparent to extraction. In this thesis, I analyze such a property in terms of presence/absence of (nominative) Case checking, assuming that “un-Specified” IP is an IP with *pro* in its Specifier. However, as Uriagereka pointed out, another possibility is that “un-Specified” projection is a projection with no Specifier, and such a deficient (or non-full) property may make a projection transparent to extraction.

bling. First, I review Takano (2010), which observes that in an obligatory control construction, a long-distance-scrambled QP can A-bind a bound variable inside a dative object controller, while it cannot A-bind a variable inside a matrix subject that is a non-controller. Generalizing that scrambling out of a control clause can produce new binding relations only when the variable is contained in a controller, Takano (2010) argues that such an asymmetry can be captured only if a) scrambling out of a control clause cannot produce a new binding relation, exactly like long-distance scrambling, and b) obligatory control involves movement of the controller (Movement Theory of Control, Bowers 1973, 2008, Hornstein 1998, 1999, and O’Neil 1995).

In this section, I examine a case where scrambling takes place out of a finite clause with a covert subject to show that the asymmetry in binding effects between the matrix subject and the matrix object is observed in such a case too, which, with the observation in the previous section, suggests that Takano’s (2010) analysis is incorrect. Then, a new generalization incorporating the observation in Section 2 and the one in this section is as in (101).

(101) *Generalization on Long-distance scrambling in Japanese (final)*

Long-distance scrambling makes variable binding possible only if i) the embedded subject is covert, and ii) a bindee is contained in the matrix dative argument (or in the matrix subject if there is no dative argument).

6.4.1 Takano (2010)

As we have seen in the previous section, Nemoto (1993) observes that scrambling out of an obligatory control clause can produce a new binding relation. Takano (2010) further examines scrambling out of an obligatory control clause in Japanese to show that it is not the case that scrambling out of the clause always can feed an A-binding. As exemplified in (103), an element that undergoes scrambling out of a control clause cannot bind a bound variable inside the matrix subject.³¹

- (102) a. *[Soko₁-no syain]-ga Ken₂-ni [_{CP} e₂ [mittu-izyoo-no
there-GEN employee-NOM Ken-DAT three.or.more-GEN
kaisya]₁-o tyoosasuru yoo(ni)] iraisita.
comany-ACC investigate COMP asked
Intended: ‘Their₁ employees asked Ken to investigate [three or more
company]₁.’
- b. *[Soko₁-no sotugyoosei]-ga Ken₂-ni [_{CP} e₂ [mittu-izyoo-no
there-GEN graduate-NOM Ken-DAT three.or.more-GEN
daigaku]₁-ni syutugansuru yoo(ni)] susumeta.
university-DAT apply COMP recommended
Intended: ‘Their₁ graduates recommended Ken to apply [three or
more universities]₁.’ (a-b, Takano 2010:88)
- (103) a. ***[Mittu-izyoo-no kaisya]₁-o_i** [soko₁-no syain]-ga Ken₂-ni
three.or.more-GEN comany-ACC there-GEN employee-NOM Ken-DAT
[_{CP} e₂ **t_i** tyoosasuru yoo(ni)] iraisita.
investigate COMP asked
Intended: ‘Their₁ employees asked Ken to investigate [three or more

³¹Nemoto (1993) judges such a sentence as mildly degraded, but not as unacceptable. However, as Takano (2010) judges, these sentences are significantly degraded contrasted with acceptable cases as in (33) and (36).

company]₁.’

- b. *[**Mittu-izyoo-no daigaku**]₁-**ni** [soko₁-no sotugyoosei]-ga
 three.or.more-GEN university-DAT there-GEN graduate-NOM
 Ken₂-ni [CP e₂ t₁ syutugansuru yoo(ni)] susumeta.
 Ken-DAT apply COMP recommended
 Intended: ‘Their₁ graduates recommended Ken to apply [three or
 more universities]₁.’ (a-b, Takano 2010:88)

The sentences in (102) and (103) are the obligatory control construction. In the examples in (103), the embedded objects undergo scrambling out of the embedded clause to the front of the sentences. The sentences in (103) are unacceptable with a bound variable reading, which suggests that even though scrambling takes place out of a control clause, the scrambled element cannot bind a bound variable inside the matrix subject. This fact is a counterexample to Nemoto’s (1993) conclusions that i) a control clause is different from a finite clause (i.e., a control clause is a non-finite clause), and ii) scrambling out of a non-finite clause behaves like clause internal scrambling.

Takano (2010) points out that the unacceptable examples in (103) clearly contrast with acceptable examples like (33), (36) and (105).

- (104) a. *Ken-ga [soko₁-no syain]₂-ni [CP e₂ [mittu-izyoo-no
 Ken-NOM there-GEN employee-DAT three.or.more-GEN
 kaisya]₁-o tyoosasuru yoo(ni)] iraisita.
 company-ACC investigate COMP asked
 Intended: ‘Ken asked their₁ employees to investigate [three or more
 company]₁.’
- b. *Ken-ga [soko₁-no sotugyoosei]-₂-ni [CP e₂ [mittu-izyoo-no
 Ken-NOM there-GEN graduate-DAT three.or.more-GEN
 daigaku]₁-ni syutugansuru yoo(ni)] susumeta.
 university-DAT apply COMP recommended

Intended: ‘Ken recommended their₁ graduates to apply [three or more universities]₁.’ (a-b, Takano 2010:87)

- (105) a. (?) [**Mittu-izyoo-no kaisya**]₁-**o**_i Ken-ga [soko₁-no three.or.more-GEN comany-ACC Ken-NOM there-GEN syain]₂-ni [_{CP} *e*₂ **t**_i tyoosasuru yoo(ni)] iraisita.
employee-DAT investigate COMP asked
Intended: ‘Ken asked their₁ employees to investigate [three or more company]₁.’
- b. (?) [**Mittu-izyoo-no daigaku**]₁-**ni**_i Ken-ga [soko₁-no three.or.more-GEN university-DAT Ken-NOM there-GEN sotugyoosei]₂-ni [_{CP} *e*₂ **t**_i syutugansuru yoo(ni)] susumeta.
graduate-DAT apply COMP recommended
Intended: ‘Ken recommended their₁ graduates to apply [three or more universities]₁.’ (a-b, Takano 2010:87)

A crucial difference between the acceptable cases and the unacceptable ones, as Takano (2010) points out, is that a bound variable is contained in a controller in the acceptable cases, whereas it is contained in a non-controller in the unacceptable ones. That is, as exemplified in (33), (36) and (105), a bound variable inside the subject controller in the subject control constructions or one inside the object controller in the object control construction can be licensed by a scrambled element. On the other hand, as exemplified in (103), a bound variable inside a matrix subject that is not a controller in the object control constructions cannot be licensed by a scrambled element. This is illustrated in (106).³²

- (106) a. *Subject control construction*

³²In the structures in (106), *e* represents an empty category, either a PRO or a trace of a controller.

- $\sqrt{\text{bind (into)}}$
 $\left[\text{XP}_j \left[\text{Subj}_1 \left[e_1 \quad t_j \quad V_{\text{embedded}} \right] V_{\text{matrix}} \right] \right]$
- b. *Object control construction*
- $\sqrt{\text{bind (into)}}$
 $\left[\text{XP}_j \left[\text{Subj} \quad \text{Obj}_1 \left[e_1 \quad t_j \quad V_{\text{embedded}} \right] V_{\text{matrix}} \right] \right]$
 *bind (into)

On the basis of this observation, Takano (2010) makes the generalization in (107).

(107) *Takano's (2010) generalization*

Scrambling out of a control clause makes variable binding possible only if
the pronominal is contained in the controller. (Takano 2010:91)

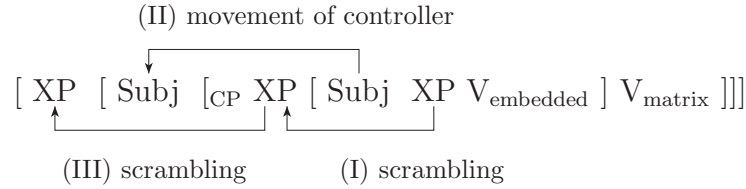
Takano (2010) further argues that the generalization (107) can only be deduced given a movement theory of control (Bowers 1973, 2008, Hornstein 1998, 1999, and O'neil 1995) and the assumption that scrambling out of a control clause is exactly like scrambling out of a finite clause.

(108) *Takano's (2010) assumption*

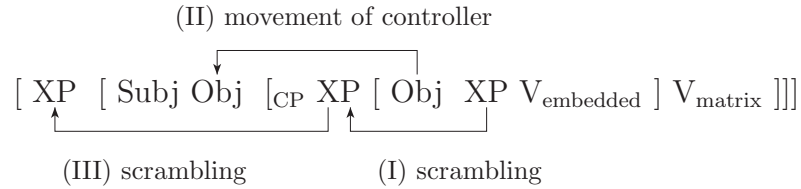
- a. Scrambling out of a control clause patterns with scrambling out of
finite clause. (i.e., scrambling out of a control clause cannot feed
binding.)
- b. Obligatory control is derived by movement of the controller.

Given a movement theory of control and the assumption that long-distance scrambling takes place cyclically, obligatory control sentences with sentence-initial scrambling are derived as illustrated in (109).

(109) a. *Subject control construction*

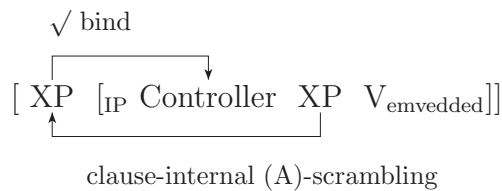


b. *Object control construction*

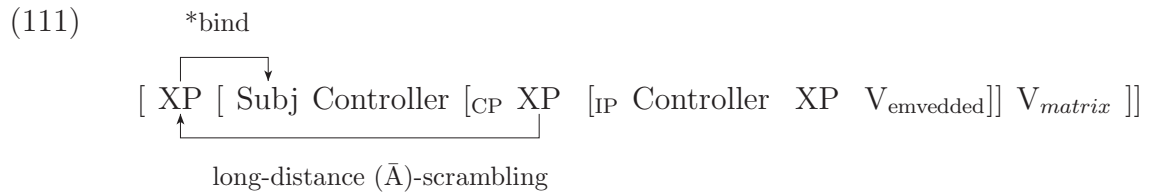


First, an embedded object XP undergoes clause-internal scrambling. After that, a controller, which is base-generated in the embedded clause, moves to the matrix clause. Then, the XP further undergoes scrambling out of the control clause to the matrix clause. Since the controller originates from the subject position in the embedded clause, the embedded object XP that undergoes clause-internal scrambling c-commands the controller and whatever it dominates at a point of the derivation.

(110)



Because clause-internal scrambling generally can produce a new binding relation, a bound variable inside the controller can be licensed by the scrambled XP. That is why scrambling out of a control clause makes variable binding possible when a bound variable is contained in the controller in obligatory control constructions. On the other hand, given the assumption that scrambling out of a control clause is exactly like scrambling out of a finite clause (i.e., it must be \bar{A} -scrambling), the scrambled XP that further undergoes scrambling to the matrix clause cannot license a bound variable inside a non-controller in the matrix clause.



That is why an element that undergoes scrambling out of a control clause cannot license a bound variable inside the matrix subject in the object control construction. Thus, Takano's (2010) generalization can be derived with the assumptions in (108).

Given that an obligatory control clause is non-finite (Nemoto 1993) Takano's study suggests that scrambling out of a clause can be captured in the same way regardless whether it is finite or non-finite, which contrasts with Nemoto's (1993) conclusion. That is, scrambling out of a clause uniformly cannot produce a new binding relation regardless of whether the clause is finite or non-finite.

Note, however, that this conclusion is wrong given that scrambling even out of a finite clause can feed binding (if the embedded subject is phonologically null),

as discussed in the previous section. In the next section, I present additional data and argue that Takano's (2010) analysis and conclusion for obligatory control constructions is incorrect. The data show that an asymmetry between binding into the matrix subject and one into the matrix object, which is the crucial factor for Takano's (2010) conclusion that an obligatory control construction is derived via a movement of controller, is observed even in a non-obligatory control construction.

6.4.2 New observation: Subject-Object asymmetry in long-distance A-scrambling

As we have seen in the previous section, Takano (2010) observes that there is an asymmetry between binding into controller and binding into non-controller in obligatory control constructions: a long-distance scrambled element can license a bound variable inside a controller, while it cannot license one inside a non-controller. Takano (2010) argues that the asymmetry can only be deduced given a Movement Theory of Control (Bowers 1973, 2008, Hornstein 1998, 1999, and O'Neil 1995) and the assumption that scrambling out of a control clause cannot feed A-binding. Based on Takano's (2010) study, the generalization as in (112) follows.

- (112) An element that undergoes long-distance scrambling can license a bound variable only if the bound variable is contained in a controller in obligatory control constructions.

Note, however, that the data in (33), which are repeated in (113), are apparently counter- examples to the generalization (112).

- (113) a. (?)**[[Mittu-izyoo-no kaisya₂]-ni]_i** Ken₁-ga [soko₂-no
three-or.more-GEN company-DAT Ken-NOM it-GEN
raibaru-gaisya-no syain]₃-ni [pro_{1/4} (izure) t_i
rival-company-GEN employee-DAT soon
oobosuru-tumori-da to] itta.
apply-will-COP COMP said
(lit.) ‘Ken₁ said to [employees of their₂ rival companies]₃ that pro_{1/4}
will apply to [three or more companies₂].’
- b. (?)**[[Mittu-izyoo-no kaisya₂]-ni]_i** Ken₁-ga [soko₂-no
three-or.more-GEN company-DAT Ken-NOM it-GEN
raibaru-gaisya-no syain]₃-ni [pro_{3/4} (izure) t_i
rival-company-GEN employee-DAT soon
oobosuru-tumori-(da) ka] tazuneta.
apply-will-COP Q asked
(lit.) ‘Ken₁ asked [employees of their₂ rival companies]₃ whether pro_{3/4}
will apply to [three or more companies₂].’
- c. (?)**[[Mittu-izyoo-no daigaku₂]-o]_i** Ken₁-ga [soko₂-no
three-or.more-GEN university-ACC Ken-NOM it-GEN
sotugyoosei]₃-ni [pro_{1/4} (izure) t_i tyoosasuru-tumori-da to] itta.
graduates-DAT soon investigate-will-COP COMP said
(lit.) ‘Ken₁ said to [their₂ graduate] that pro_{1/4} will investigate [three
or more universities₂].’
- d. (?)**[[Mittu-izyoo-no daigaku₂]-o]_i** Ken₁-ga [soko₂-no
three-or.more-GEN university-ACC Ken-NOM it-GEN
sotugyoosei]₃-ni [pro_{3/4} (izure) t_i tyoosasuru-tumori-(da) ka]
graduates-DAT soon investigate-will-COP Q
tazuneta.
asked
(lit.) ‘Ken₁ asked [their₂ graduate]₃ whether pro_{3/4} will
investigate [three or more universities₂].’

The sentences in (113) are not obligatory control constructions (non-OCC) since the embedded null subject can be coreferential with the matrix subject or the matrix

object, or interpreted deictically. The acceptability of the sentences shows that an element that undergoes long-distance scrambling can license a bound variable even when the variable is not contained in an argument coreferential with the embedded null subject, which is a counterexample to the generalization in (112).

Moreover, the asymmetry between binding into the matrix subject and the matrix object is also observed in the case where scrambling takes place out of a finite clause without an overt subject. Contrasted to the acceptable cases in (113), where a bound variable is contained in the matrix object, the scrambled elements cannot license a bound variable inside the matrix subject when the scrambling takes place out of an finite clause with a covert subject, as exemplified in (115).

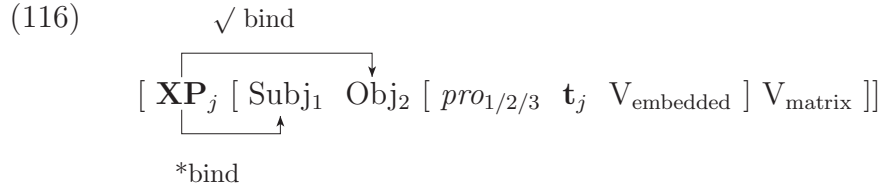
- (114) a. *[Soko₂-no raibaru gaisya-no syain]₁-ga Ken₃-ni [pro_{1/4}
 it-GEN rival company-GEN employee-NOM Ken-DAT
 (izure) [mittu-izyoo-no kaisya₂]-ni oobosuru-tumori-da to]
 soon three-or.more-GEN company-DAT apply-will-COP COMP
 itta.
 said
 Intended: ‘[Employees of their₂ rival companies]₁ said to Ken₃ that
 pro_{1/4} will apply to [three or more companies₂].’
- b. *[Soko₂-no raibaru gaisya-no syain]₁-ga Ken₃-ni [pro_{3/4}
 it-GEN rival company-GEN employee-NOM Ken-DAT
 (izure) [mittu-izyoo-no kaisya₂]-ni oobosuru-tumori-(da) ka]
 soon three-or.more-GEN company-DAT apply-will-COP Q
 tazuneta.
 asked
 Intended: ‘[Employees of their₂ rival companies]₁ asked Ken₃ whether
 pro_{3/4} will apply to [three or more companies₂].’
- c. *[Soko₂-no sotugyoosei]₁-ga Ken₃-ni [pro_{1/4} (izure)
 it-GEN graduates-NOM Ken-DAT soon
 [mittu-izyoo-no daigaku₂]-o tyoosasuru-tumori-da to] itta.
 three-or.more-GEN university-ACC investigate-will-COP COMP said
 Intended: ‘[Their₂ graduate]₁ said to Ken₃ [that pro_{1/4} will

investigate [three or more universities₂]].’

- d. *[Soko₂-no sotugyoosei]₁-ga Ken₃-ni [pro_{3/4} (izure)
it-GEN graduate-NOM Ken-DAT soon
[mittu-izyoo-no daigaku₂]-o tyoosasuru-tumori-(da) ka]
three-or.more-GEN university-ACC investigate-will-COP Q
tazuneta.
asked
Intended: ‘[Their₂ graduate]₁ asked Ken₃ whether pro_{3/4} will
investigate [three or more universities₂]].’

- (115) a. *[Mittu-izyoo-no kaisya]₂-ni_i [soko₂-no raibaru gaisya-no
three-or.more-GEN company-DAT it-GEN rival company-GEN
syain]₁-ga Ken₃-ni [pro_{1/4} (izure) t_i oobosuru-tumori-da
employee-NOM Ken-DAT soon apply-will-COP
to] itta.
COMP said
Intended: ‘[Employees of their₂ rival companies]₁ said to Ken₃ that
pro_{1/4} will apply to [three or more companies₂]].’
- b. *[Mittu-izyoo-no kaisya]₂-ni [soko₂-no raibaru gaisya-no
three-or.more-GEN company-DAT it-GEN rival company-GEN
syain]₁-ga Ken₃-ni [pro_{3/4} (izure) t_i oobosuru-tumori-(da) ka]
employee-NOM Ken-DAT soon apply-will-COP Q
tazuneta.
asked
Intended: ‘[Employees of their₂ rival companies]₁ asked Ken₃ whether
pro_{3/4} will apply to [three or more companies₂]].’
- c. *[Mittu-izyoo-no daigaku]₂-o_i [soko₂-no sotugyoosei]₁-ga
three-or.more-GEN university-ACC it-GEN graduates-NOM
Ken₃-ni [pro_{1/4} (izure) t_i tyoosasuru-tumori-da to] itta.
Ken-DAT soon investigate-will-COP COMP said
Intended: ‘[Their₂ graduate]₁ said to Ken₃ [that pro_{1/4} will
investigate [three or more universities₂]].’
- d. *[Mittu-izyoo-no daigaku]₂-o_i [soko₂-no sotugyoosei]₁-ga
three-or.more-GEN university-ACC it-GEN graduate-NOM
Ken₃-ni [pro_{3/4} (izure) t_i tyoosasuru-tumori-(da) ka] tazuneta.
Ken-DAT soon investigate-will-COP Q asked
Intended: ‘[Their₂ graduate]₁ asked Ken₃ whether pro_{3/4} will
investigate [three or more universities₂]].’

The sentences in (113) and the ones in (115) are different from each other only in that the matrix subject and the matrix dative object are switched so that one has a bound variable inside the subject and the other has it inside the dative object. As shown by the acceptable sentences in (113) the element scrambled out of the clause with null subject can bind into the matrix object. As shown by the unacceptable sentences in (115), on the other hand, the element scrambled out of a finite clause with a null subject cannot bind into the matrix subject if the matrix object exists.



The present observations illuminate the following three aspects of long-distance scrambling in Japanese, which are problematic for Takano's (2010) analysis.

- (117)
- a. Long-distance-scrambled elements can bind into the matrix dative argument even though the sentence is not an obligatory control construction (non-OCC).
 - b. There is a grammatical asymmetry between binding into the matrix subject and into the matrix dative argument even in non-OCCs.
 - c. Whether a scrambled XP can bind a variable is not related to whether the null element is coreferential to an element containing the variable.

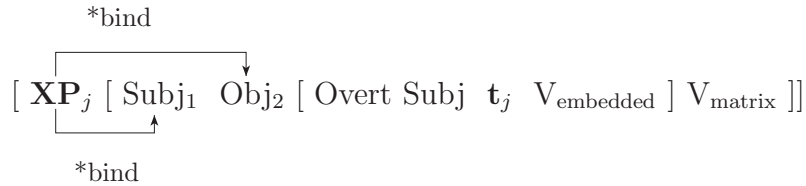
As stated in (117-a), long-distance scramble can produce new binding relations even in non-OCCs if the embedded subject is null, which is shown by the acceptable sentences in (113). Takano (2010) argues that long-distance scrambling makes variable binding possible only in obligatory control constructions, because in this case, the controller in the matrix clause is base-generated in the embedded clause under the framework of the Movement Theory of Control. Since the acceptable sentences in (113) are non-OCCs, the acceptability cannot be explained under Takano's (2010) analysis.

Moreover, Takano (2010) observes an asymmetry such that long-distance scrambling out of a control clause can feed binding into the matrix object but cannot feed binding into the matrix subject when there is an object in the matrix clause. Takano (2010) construes the asymmetry as the asymmetry between binding into the controller and into a non-controller (i.e., scrambling out of a control clause creates a new binding relations when a bound variable is contained in the controller in OCCs, whereas scrambling out of it cannot create a new binding relation when a bound variable is not contained in the controller) and argues that the asymmetry can only be explained under the Movement Theory of Control. If Takano's (2010) analysis is on the right track, the asymmetry shows crucial evidence for the Movement Theory of Control. Note, however, that as stated in (117-b), such an asymmetry between binding into the matrix object and into the matrix subject is observed even in non-OCCs, which is shown by the contrast between the sentences in (113) and the ones in (115).

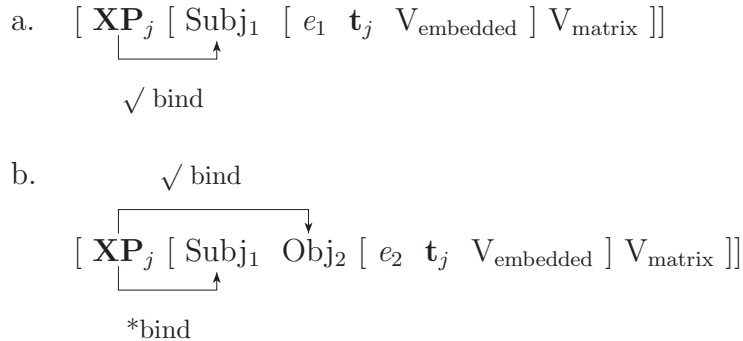
Finally, as discussed before, long-distance scrambling can make variable binding possible even when a bound pronoun is not contained in an element coreferential to the embedded null subject. Therefore, regardless of which element is coreferential to the null subject in the embedded clause, long-distance scrambling can feed binding into the matrix object but cannot feed binding into the matrix subject when the matrix object is present. These properties cannot be explained under the analysis proposed in Takano (2010).

Let us, then, consider what the correct generalization about long-distance scrambling is that can feed binding, on the basis of Takano's (2010) observation and the new observation presented here.

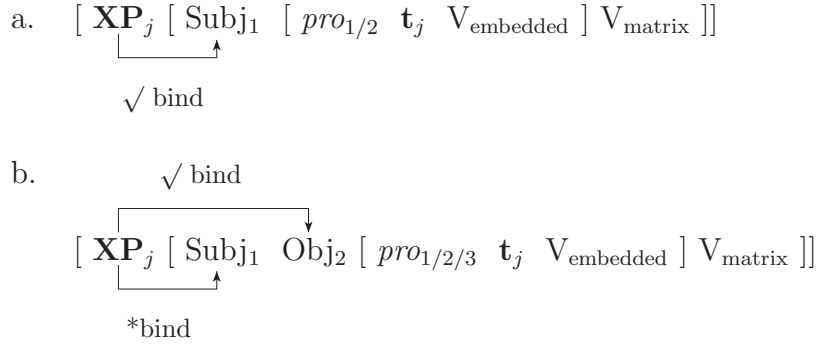
(118) *Old observation*



(119) *Takano's (2010) observation*



(120) *New observation*



Note that Takano's (2010) observation and the new observation share two properties; (i) an embedded element that undergoes long-distance scrambling can bind (into) an element in the matrix clause if the embedded subject does not appear overtly, and (ii) it cannot bind (into) the matrix subject if the matrix object exists. Thus, the new generalization that incorporates Takano's observation and the new observation is as follow.

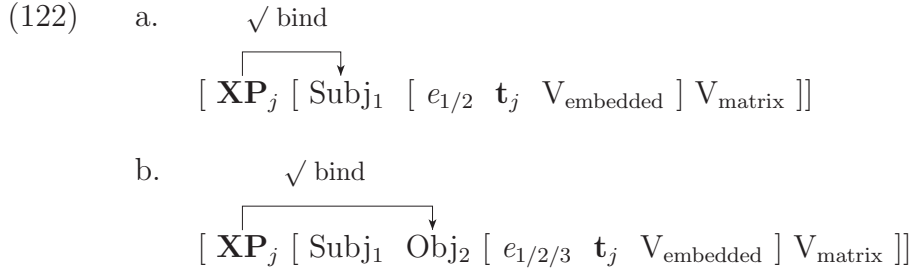
(121) *Generalization on long-distance scrambling in Japanese (final)*

Long-distance scrambling can feed binding only if i) the embedded subject is null, and ii) a bindee is contained in the matrix dative argument (or in the matrix subject if there is no dative argument).

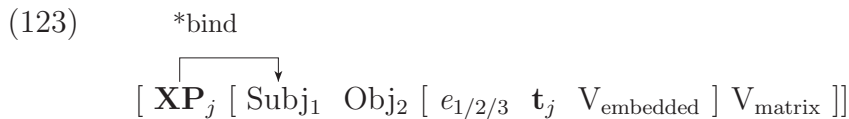
The first condition in the generalization, which states that the embedded subject must be null so that long-distance A-scrambling is possible, was discussed in the previous section. We will look at how the second condition can be captured under the present analysis in the next subsection.

6.4.3 Analysis: deriving the final version of the generalization

As stated in the generalization (121), there are two necessary conditions for long-distance scrambling to feed a new binding relation. One is that the embedded subject must be null, and the other is that a bound pronoun must be contained in the matrix object if the matrix object is present. As discussed in Section 6.3.5, the former condition can be explained given the two assumptions, (i) a null element needs no Case and (ii) Case-assignment/-checking determines phases. As for the latter condition, we have seen in Section 6.3.5 that the proposed analysis can explain the acceptable cases in which a scrambled embedded object binds into the matrix object and binds into the matrix subject when no matrix object is present.



In this subsection, I will discuss how the proposed analysis can explain the fact that an element that undergoes long-distance scrambling cannot bind into the matrix subject.



Consider a possible derivation where an embedded object undergoes long-distance scrambling into the matrix clause that has an (indirect) object. Under the proposed analysis, an embedded object first moves from the original position to the *v*P-edge position. Without moving to this position, it cannot move to a higher position because of the PIC. In this movement, ϕ -features of the object can be pied-piped to the landing site. Then, if it moves from the *v*P-edge position to the IP-adjoined position, it can pied-pipe its ϕ -features to the landing site.

$$(124) \quad \begin{array}{c} [\text{IP } \text{Obj-}\phi/\text{Case} [\text{IP } \text{Subj-}\phi/\text{Case } \text{I}^0 [\text{vP } \text{Obj-}\phi/\text{Case} [\text{Subj-}\phi/\text{Case } v^0 [\text{VP } \text{V}^0 \text{Obj-}\phi/ \\ \text{Case}]]]]]] \quad \quad \quad \checkmark \text{ pied-piping of } \phi \end{array}$$

As discussed in Section 6.3.5, if the embedded subject is null, the embedded CP is not a phase. Thus, in this case, the embedded object can directly move from the embedded IP-adjoined position into the matrix clause. In the case where the matrix object is present, the embedded object must move to an adjoined position to the maximal projection whose Spec is occupied by the matrix object. Otherwise, the embedded object cannot carry its ϕ -features to a higher position because the ϕ -features of the matrix object becomes an intervenor. Then, if the embedded object moves to the matrix VP-adjoined position, it can carry its ϕ features to the landing site.

$$(125) \quad \begin{array}{c} \text{CP} \neq \text{Phase} \\ [\text{VP } \text{Emb } \text{Obj-}\phi/\text{Case} [\text{VP } \text{Mat } \text{Obj-}\phi/\text{Case} [\text{CP } [\text{IP } \text{Emb } \text{Obj-}\phi/\text{Case} [\text{IP } e [\dots]]]]]]] \\ \quad \quad \quad \checkmark \text{ pied-piping of } \phi \end{array}$$

Note that once the object moves to the matrix VP-adjoined position, it cannot move to the matrix *v*P-edge position, because the pre-movement position and the post-movement position are within the same minimal domain and such a movement is disallowed by the anti-locality condition.

$$(126) \quad \boxed{[_{vP} \text{ Emb Obj } [_{\text{Mat}} \text{ Subj } v^0 [_{VP} \text{ Emb Obj } \dots]]]} \quad \text{*Anti-locality}$$

Thus, the object in the matrix VP-adjoined position must move to a position higher than the matrix *v*P. Then, when it moves to a position that c-commands the matrix subject in [Spec, IP], it cannot pied-pipe its ϕ -features to the landing site because the movement crosses intervening ϕ -features of a copy of the subject in [Spec, *v*P] so the locality-condition on generalized pied-piping prohibits the pied-piping.³³

³³Chomsky (1995b, 2001, 2004) argues that a trace does not count as an intervener for Relativized Minimality effects, which is evidenced by the following examples.

- (i) *Italian raising*
- a. ??Gianni sembra a Piero fare il suo dovere.
 Gianni seems to Piero do.INF the his duty
 ‘Gianni seems to Piero to do his duty.’
- b. A Piero_i, Gianni sembra t_i fare il suo dovere.
 to Piero Gianni seems do.INF the his duty
 ‘Gianni seems to Piero to do his duty.’ (McGinni 1998:92)

As the acceptability contrast in (i) shows, while the overt DP, *a Maria*, in (ib) is an intervener for a raising of *Gianni*, the \bar{A} -trace of it is not an intervener. This contrast can be captured with the assumption that a trace does not count as an intervener. If this assumption is correct, a copy of the subject in *v*P-Spec in the structure (127) should not be an intervener for the embedded object’s movement to the matrix IP-adjoined position. (See Nunes (2004)) for some arguments

$$(127) \quad \begin{array}{c} [\alpha P \text{ Emb} \text{Obj-}\phi/\text{Case} [\text{IP Mat} \text{Subj-}\phi/\text{Case} \text{I}^0 [\text{VP Mat} \text{Subj-}\phi/\text{Case} v^0 [\text{VP Emb} \text{Obj-}\phi/\text{Case} \\ \text{[VP} \cdot \cdot \cdot \text{]]}]]] \end{array} \quad \begin{array}{c} \uparrow \\ \text{*pied-piping of } \phi \end{array}$$

Thus, in the LF structure, no copy of the embedded object that is available for binding c-commands a copy of the matrix subject that is available for binding.

$$(128) \quad \begin{array}{c} [\alpha P \text{ Emb} \text{Obj-}\phi/\text{Case} [\text{IP Mat} \text{Subj-}\phi/\text{Case} \text{I}^0 [\text{VP Mat} \text{Subj-}\phi/\text{Case} v^0 [\text{VP Emb} \text{Obj-}\phi/\text{Case} \\ \text{[VP} \cdot \cdot \cdot \text{]]}]]] \end{array}$$

against this assumption).

Note, however, that as Bruening (2012) observes, a raising sentence is degraded when even an adjunct appears between a raising Subject and a raising predicate.

(ii) *Italian*

- a. Sembra in alcune occasioni [che Gianni accia il suo dovere].
seems on some occasions that Gianni does the his duty
‘It seems on some occasions that Gianni does his duty.’
- b. ??Gianni_i sembra [in alcune occasioni] t_i fare il suo dovere.
Gianni seems on some occasions do,INF the his duty
‘Gianni seems on some occasions to do his duty.’
- c. [In alcune occasioni], Gianni sembra fare il suo dovere.
on some occasions Gianni seems do,INF the his duty
‘On some occasions, Gianni seems to do his duty.’ (Bruening 2012:3)

Given this observation, Bruening (2012) concludes that the degradedness of sentences as in (ia) is not an intervention effect, rather to a word order constraint. If the conclusion is correct, the grammaticality contrast in (i) does not show that a trace does not count as an intervener for Relativized Minimality.

A similar effect is also observed in English agreement in *there* constructions, as discussed in footnote 21 in Chapter 4. Thus, a certain A-dependency is sometimes blocked by intervening XP, regardless of whether it is an argument or adjunct, which cannot be attributed to the relativized minimality.

This is why long-distance scrambling can never feed binding into the matrix subject if the matrix object is present, as shown by the following example.

- (129) ***[Mittu-izyoo-no kaisya₂]-ni_i** [soko₂-no raibaru gaisya-no
 three-or.more-GEN company-DAT it-GEN rival company-GEN
 syain]₁-ga Ken₃-ni [pro_{1/4} (izure) t_i oobosuru-tumori-da to]
 employee-NOM Ken-DAT soon apply-will-COP COMP
 itta.
 said
 Intended: ‘[Employees of their₂ rival companies]₁ said to Ken₃ that
 pro_{1/4} will apply to [three or more companies₂].’

Thus, given the proposed analysis, it is possible to derive the subject-object asymmetry in binding effects in long-distance scrambling in Japanese.³⁴

6.5 Conclusion

In this chapter, I examined an environment where scrambling can make a new binding relation. Contrary to the assumed generalization, I observe that scrambling even out of a finite clause is possible if the embedded subject is covert. I also observe that in such a case, a fronted element can bind into the matrix object but cannot into the matrix subject if a matrix object exists. Following the observations, I made the generalization as stated in (130).

- (130) *Generalization on long-distance scrambling in Japanese*

Long-distance scrambling makes A-binding possible only if i) the embed-

³⁴For a discussion on long-distance scrambling out of an ECM clause in Japanese, see Goto (2013).

ded subject is covert, and ii) a bindee is contained in the matrix dative argument (or in the matrix subject if there is no dative argument)

I showed that given the proposed analysis, it is possible to derive the generalization (130) without resorting to A/ \bar{A} -distinction.

Chapter 7: Conclusion

In this thesis, I proposed a theory of generalized pied-piping of formal features assuming that generalized pied-piping of formal features (or Copy under the current framework after Chomsky 2000, 2001) is not cost-free but subject to a syntactic constraint. Chomsky (1995:Chapter 4) proposes that when a syntactic object X undergoes a movement triggered by a formal feature α , the other formal features of X can be pied-piped to the landing site *automatically*, which Ura (2001) interprets as meaning that pied-piping of formal features is cost-free and free from a syntactic constraint. I call such a hypothesis “generalized pied-piping of formal features”. In contrast to generalized pied-piping of formal features, Ura (2001) proposes that pied-piping of formal features is subject to a locality condition like *relativized minimality*. On the basis of Ura’s (1995) proposal, I proposed in this thesis that how an element that undergoes a movement can pied-pipe its formal features is determined by the locality condition on generalized pied-piping (Ura 2001) and the anti-locality condition on movement (Koizumi 1993, 2000, Abels 2003a,b, Bošković 2005; cf. Fukui 1993, Saito and Murasugi 1999, Grohmann 2000), in which I adopt the definitions of *intervene* and *minimal domain* given in Chomsky (1995).

(1) *Locality Condition on Generalized Pied-Piping*

A formal feature cannot be pied-piped as a free rider if there is an intervening matching feature.

(2) *Anti-locality Condition on Movement*

Movement within a minimal domain is disallowed.

Given the locality condition on generalized pied-piping (1), if an element XP undergoes movement which is triggered by a formal feature other than γ , it cannot pied-pipe its γ -feature to the landing site if another γ -feature is intervening.

$$(3) \quad [\text{UP } \text{XP-}\gamma \dots [\text{WP } \underline{\text{ZP-}\gamma} [\text{W'} \text{W}^0 [\text{YP } \dots \text{XP-}\gamma \dots]]]]$$

*pied-piping of ϕ

As discussed in Section 2.2, with the definition of *minimal domain* given in Chomsky (1995), a Specifier position and an adjoined position of the same Head are within the same minimal domain and equidistant from another position, so if a moved element XP adjoins to an WP whose Specifier is occupied by a potential intervener with γ -feature, XP can pied-pipe its γ -feature to the landing site.

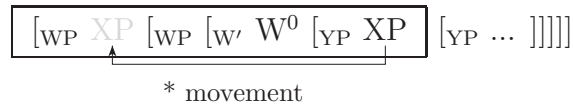
$$(4) \quad [\text{UP } \text{XP-}\gamma \dots [\text{WP } \text{XP-}\gamma [\text{WP } \text{ZP-}\gamma [\text{W'} \text{W}^0 [\text{YP } \dots \text{XP-}\gamma \dots]]]]]]$$

✓ pied-piping of ϕ

Thus, adjunction enables an element to pied-pipe its formal features to a landing site even if there is an intervening matching feature on the way to the landing

site, which means that if adjunction operation can apply freely, there should be no relativized minimality effects. Under my proposal, however, it is not the case that adjunction operation can take place freely. That is, given the anti-locality condition on movement (2), movement from an XP-adjoined position to the next higher maximal projection is prohibited since the former position and the latter position are within the same minimal domain.

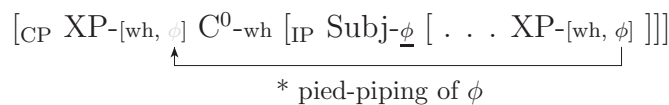
(5) minimal domain



For this reason, sometimes adjunction to XP is impossible, and due to the unavailability of adjunction, a moved element cannot pied-pipe its formal features to the landing site when it moves across an intervening matching feature. This is the proposed theory of generalized pied-piping.

Given the proposed analysis, as shown in Section 2.2, when XP undergoes \bar{A} -movement to [Spec, CP] that is triggered by wh-feature or whatever features relevant to the \bar{A} -movement, the moved element cannot carry its ϕ -features to the landing site if the subject with ϕ -features is in [Spec, IP].

(6) *Under the proposed analysis*



This is contrasted to the hypothesis of generalized pied-piping of formal features such that pied-piping of formal features is cost-free and free from any syntactic constraint. That is, under the hypothesis, an element that undergoes \bar{A} -movement to [Spec, CP] can carry its ϕ -features to the landing site regardless of whether there are intervening ϕ -features or not.

(7) a. *Under generalized pied-piping of formal features*

$$\begin{array}{c}
 [\text{CP } \text{XP}_{-[\text{wh}, \phi]} \text{ C}^0_{-\text{wh}} [\text{IP } \text{Subj-}\underline{\phi} [\dots \text{XP}_{-[\text{wh}, \phi]}]]] \\
 \uparrow \hspace{10em} \downarrow \\
 \text{✓ pied-piping of } \phi
 \end{array}$$

Thus, the two analyses make different predictions on pied-piping of ϕ -features by an element that undergoes \bar{A} -movement.

In this thesis, I examined some cases involving \bar{A} -movement, wh-agreement phenomena in Bantu languages and WCO effects in various situations in English, Japanese and other languages to show that these phenomena can be derived from the proposed analysis.

In Chapter 3, I showed that given the proposed analysis, it is possible to account for the patterns of wh-agreement in the Bantu languages, Lubukusu, Kilega, and Kinande. As presented in Section 3.2, Lubukusu shows a subject/object asymmetry such that wh-agreement appears in subject extraction but not in object extraction. Assuming that wh-agreement in the Bantu languages is ϕ -feature agreement that takes place under Spec-Head configuration in CP, the asymmetry is what is straightforwardly derived from the proposed analysis: Since an object wh-phrase

cannot carry its ϕ -features to [Spec, CP] because of intervening ϕ -features of the subject in [Spec, IP], it cannot undergo wh-agreement.

Moreover, given the proposed analysis, the prediction (8) follows.

- (8) A subject is not in an intervening position when wh-agreement takes place in non-subject extraction.

Section 3.3 and 3.4 showed that the prediction (8) is borne out in Kilega and Kinande. As presented in these sections, Kilega and Kinande, contrasted to Lubukusu, show wh-agreement in object (or non-subject) extraction as well as subject extraction. I showed that a subject stays in [Spec, ν P] in non-subject extractions in Kilega and that it is topicalized and in an IP-adjoined position in Kinande, thanks to which ϕ -features of the subject are not interveners for an object's pied-piping its ϕ -features to [Spec, CP].

Thus, the proposed analysis makes it possible to account for the patterns of wh-agreement found in the Bantu languages.

Chapter 4-6 concerned binding phenomena, especially Weak Crossover (WCO) effects, in English, Japanese and other languages. As discussed in Section 4.2, in previous studies, presence/absence of WCO effects has been accounted for using the notion of A/ \bar{A} -distinction. However, such an analysis resorting to A/ \bar{A} -distinction has a theoretical problem; since it is unclear what is the crucial factor that determines A/ \bar{A} -position, such an analysis is not a principled analysis.

In order to derive the possibility of binding, I proposed (9) with the theory of generalized pied-piping proposed in Chapter 2.

- (9) Only a copy with ϕ -features is available for binding.

Given the proposal (9), whether a moved element can bind a bindee is dependent on whether a copy of the moved element has ϕ -features at the landing site, and that is determined by the theory of generalized pied-piping. In Chapter 4, I showed that the presence/absence of WCO effects in various situations in English can be explained by the proposed analysis.

Moreover, I showed that the present analysis makes it possible to account for cross-linguistic differences in WCO effects in object fronting. In contrast to English, some languages like German and Japanese do not show WCO effects when a quantificational object moves across a subject containing a bound pronoun.

- (10) a. *?Who_{1*i*} does [his₁ mother] love t_{*i*}?
 b. Wen_{1*i*} liebt [seine₁ Mutter] t_{*i*}?
 who-ACC loves his mother.NOM
 ‘Who₁ does his₁ mother love?’ (*German*)
 c. Dare_{1-*o*_i} [soitu₁-no hahaoya]-ga t_{*i*} aisiteiru no?
 who-ACC the.person-GEN mother-NOM love Q
 ‘Who₁ does his₁ mother love?’ (*Japanese*)

In Section 5.3, I argued that under the proposed analysis, a language can be exempted from WCO effects in object fronting either if (i) a subject does not have to be in [Spec, IP] or (ii) a wh-phrase can move to an IP-adjoined position in the

language. I showed that the languages without WCO effects have one (or both) of these properties. That is, the cross-linguistic differences in WCO effects can be derived by the proposed analysis.

Chapter 6 examined binding effects in Japanese scrambling. Contrary to the widely-held view that clause-internal scrambling can feed binding while long-distance scrambling cannot, I observed that even long-distance scrambling can produce a new binding relation in some environments. Based on the novel observation, the generalization (11) was made.

(11) *Generalization on long-distance scrambling in Japanese*

Long-distance scrambling can produce a new binding relation only if i) the embedded subject is null and ii) a bindee is contained in the matrix dative argument (or in the matrix subject if there is no dative argument).

I showed that the generalization (11) can be derived by the proposed analysis.

Thus, wh-agreement phenomena in Bantu languages and WCO effects in various languages, although apparently totally different phenomena, can be accounted for under the same analysis in terms of “pied-piping of ϕ -features”. Note that it is not entirely clear whether Ura’s (2001) proposal is an alternative to Chomsky’s (1995) as he claims, or, rather, an elaboration of it. However, that is not really important, and what is important is that the locality condition on generalized pied-piping proposed by Ura (2001) turns out to have desirable consequences.

As I discussed in Section 2.4.1, the notion of generalized pied-piping was introduced and used under the framework of Chomsky (1995), but under the current framework after Chomsky (2000, 2001) there is no independent operation corresponding to generalized pied-piping. Then, the condition on generalized pied-piping can be re-defined as a condition on *Copy* under the current framework, in which movement (Move) is decomposed into Copy and Merge.

(12) *Condition on Copy*

Copying a formal feature α is disallowed if it is c-commanded by a matching feature α that is not within a minimal domain of X^0 that has an unchecked EPP-feature.

Such a condition, however, seems not to be conceptually motivated since it is difficult to attribute the condition to locality or economy. Therefore, under the current framework, apparently the locality condition on generalized pied-piping is theoretically problematic. However, as shown in this thesis, wh-agreement phenomena in Bantu languages, WCO effects in English and Japanese and cross-linguistic variations in presence/absence of WCO effects can be explained given the condition, which means that these phenomena lend empirical support for the hypothesis that movement (or Copy) of formal features is subject to a locality constraint.

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